

Chemical Week

February 28, 1955

Price 35 cents



Crusade with vigor: That's what CIO chemical leaders are now urging on members p. 18

▶ **Income tax expert Prerau** advises technical executives how to profit from deductions p. 52

Simple, but often ignored: cut equipment costs, make specs flexible p. 40

▶ **Welsbach's Hann:** Large generating units are his springboard to lower ozone costs p. 56

▶ **Aerosol and refrigerant prospects** convince fluorocarbon makers to build for ten years ahead . . p. 85





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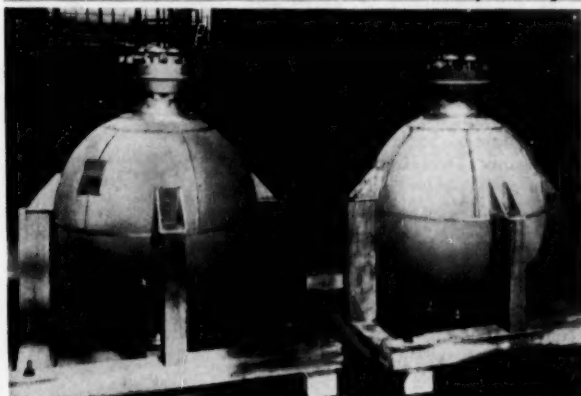
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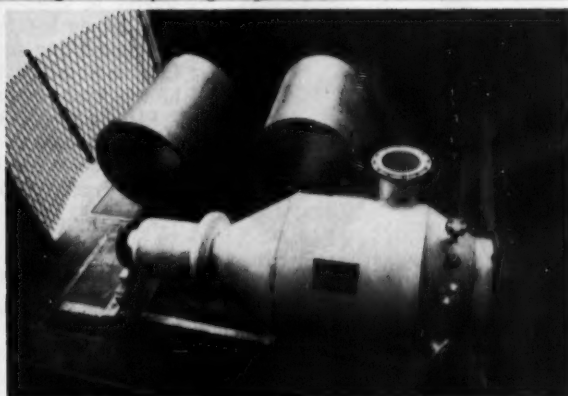
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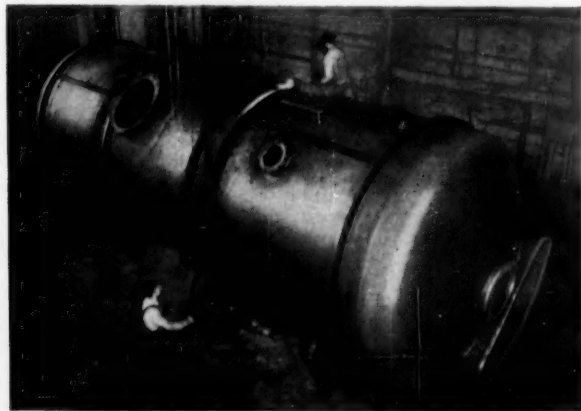
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These 42" diameter 304 stainless steel spheres are for the storage of monomer chemicals, with an operating temperature of minus 58° F. and a pressure of 500 psig. The welding of the 12 spherical segments to form each tank was performed in compliance with Paragraphs U-69 and U-140 of the A.S.M.E. Code.



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Items such as flash coolers, reactors, decanters, percolators and separators are constructed. Often storage drums and tanks require special features. Complete evaporation units, single or multiple effect, natural or forced circulation, are built. The individual items—bodies, calandrias, heat belts—also are available. Comparison on cost can be made between any of the metals—solid, clad or lined—through Vulcan's wide range of experience in alloy as well as copper and steel fabrication. Acetic acid, ethylene glycol, isopropanol, fatty acids and pharmaceuticals are typical products being handled in Vulcan-built equipment.

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DIVISIONS OF THE VULCAN COPPER & SUPPLY CO.

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THIS IS **MERCHANTS**



This is Clifford P. Barth, Manager of our Minneapolis office. After obtaining a Master's Degree in Chemistry at the University of Cincinnati in 1943, he had five years of practical experience in research and development and then joined our Cincinnati office as a salesman. In October 1952 he was made manager of our Minneapolis office.

Mr. Barth is a member of the American Chemical Society, American Electroplaters' Society, Minneapolis Chemists' Forum, Twin Cities Allied Trades Association and Alpha Chi Sigma.

From our Minneapolis warehouse seven salesmen cover the States of Minnesota, North Dakota and the northern part of Wisconsin. Merchants has served this area for over 33 years and at present is constructing a larger, modern warehouse in Minneapolis.

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Chemical Week

Volume 76

February 26, 1955

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Behind the News

COCHRAN CLV

PLS KIPPLE US SOONEST HARSHAW-ZINNSER
DEAL. WE MUST MEET 2 PM DEADLINE
TOMORROW.

B & I DEPT.

CW NY

One merger any week is news. But as one of my colleagues gasped the other day: "Three mergers this week; that's merger measles—and NEWS."

What had intrigued him, of course, was the Witco-Emulsol, Pennsalt-Index and Harshaw-Zinnser deals, which you read about last week (*Feb. 19, p. 20*). And because you ask us so frequently how we gather information on the week's events, I thought you would be especially interested in a behind-the-page look at the development of that story.

It all began, actually, almost a month ago. Late one afternoon a teletype crackled in from Midwest Editor Frank Byrnes. He alerted us: "Emulsol will be bought within a couple of weeks by major chemical company. I don't know yet who's buying." It wasn't long before we had identified the "unknown" prospective purchaser as Witco and had started to write a brief piece on the

amalgamation. But, while the story was still "in typewriter," two other reports came in telling us what Harshaw and Pennsalt planned. That's when the Business & Industry editors decided to "pull" the Witco item and go ahead instead on a bigger (full page) roundup on the three mergers and their significance. A deadline was crowding them; they had to move fast.

Within half an hour teletypes flashed out to Midwest Editor Byrnes (to query Emulsol); to Southwest Editor Jim Lee (to update us on Index Chemical—on which we had previously published a news story); to our Washington Bureau's Glen Bayless (to background us on what the Dept. of Justice was murmuring about mergers); to Cleveland Bureau Chief Bob Cochran* (re Harshaw)

* See cut. In CH's own teletype "kipple" means "get us all the information you can." Derivation: Rudyard Kipling's "I keep six honest serving-men (They taught me all I knew); Their names are What and Why and When And How and Where and Who."

and to Correspondent Allen Sommers in Philadelphia (on Pennsalt). Early the next morning one of our New York editors drove up to Hastings-on-Hudson to talk with Zinnser executives; another interviewed Witco people at their Manhattan headquarters.

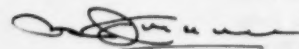
By noon we had a stack of information on hand—enough really to write a five-page article. By 2 o'clock the Business & Industry editors had woven the salient and significant data into a tightly written, fast-reading single-page report. Within hours it was relayed to our Philadelphia printer, set in type, printed overnight.

The final result—what you read—was a mere three columns in last week's issue—three columns out of a total in all departments of 122. The other 119 columns were created in much the same manner—some more easily, of course; but some with even greater difficulty.

Why do we go to these lengths (and expense) to gather news? We, like you, are in the thick of competition. You're bidding for a share of a market, we're bidding for a share of your time.

As a management man, you have heavy demands, we know, on your time—a torrent of memos to read, magazines to peruse, reports to appraise, things to do. Other activities—radio, TV, theater, hobbies—compete for your few leisure hours.

You haven't much time to read. Only by concentrating our hours of effort into your minutes for reading can we make your time count.



Editor

OPINION . . .

Tooth Mottler?

TO THE EDITOR: I note (*Feb. 12, p. 10*) that the School of Dentistry of the University of Indiana has run clinical tests with a fluoride-containing

toothpaste. I am not against fluoridizing water, but if 1 part per million of fluorine in water is sufficient to prevent dental caries and if 1.8 parts per million are in the danger zone, an uncertain larger amount will cause mottled teeth and other difficulties.

Who knows what trouble we may

get into by fluoridizing toothpaste? Fluoridized toothpaste might be satisfactory for regions where water is not treated, but what agency is going to restrict its use to them?

The Salt Producers Assn. has turned down a movement to add fluorides to salt because of the danger of over-

fluoridization and disapproval of the Federal Food & Drug Administration.

C. D. LOOKER
Director of Advisory Service
International Salt Co., Inc.
Watkins Glen, N.Y.

No Polemicists We

TO THE EDITOR: That great authority on philology, Humpty Dumpty, is reported by Lewis Carroll to have said—"A word means whatever I choose it to mean," which is a fine state of affairs for one in his position. You and I, however, who have to use words as tools are under a little obligation to be sure that the other guy will also know what the word means.

For instance, the headline in your Jan. 15 issue regarding the President's proposals—"Some Polemical, Some Not."

I always thought that polemical meant containing an argument, not likely to produce one. For instance, this letter is not polemical. . .

KARL M. HERSTEIN
President

Herstein Laboratories, Inc.
New York, N.Y.

No polemic between us—but there is between dictionaries. Webster makes polemical synonymous with controversial; Thorndike-Barnhart more nearly agrees with Reader Herstein.
—Ed.

DATES AHEAD...

Drug, Chemical and Allied Trades section of the N.Y. Board of Trade, annual dinner, Waldorf-Astoria hotel, New York, March 3.

Commercial Chemical Development Assn., "Public Relations in New Product Development" meeting, Statler hotel, New York, March 17.

Fourth Annual Water Symposium, Louisiana State University, Baton Rouge, March 22-23.

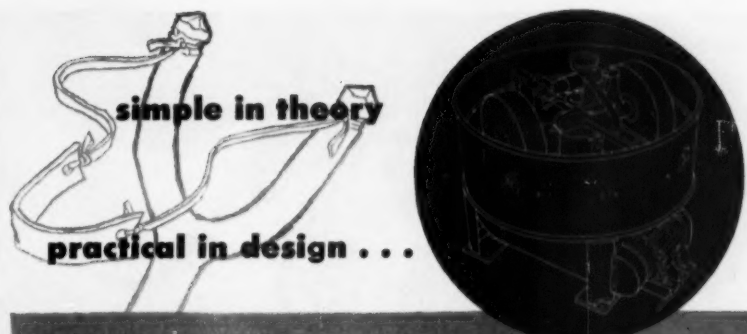
National Farm Chemurgic Council, annual chemurgic conference, Deshler-Hilton hotel, Columbus, O., March 22-24.

National Industrial Conference Board, marketing conference, Shamrock hotel, Houston, March 24.

World Plastics Fair and Trade Exposition, National Guard Armory, Los Angeles, April 6-10.

American Drug Manufacturers Assn., annual meeting, Boca Raton Club, Boca Raton, Fla., April 13-14.

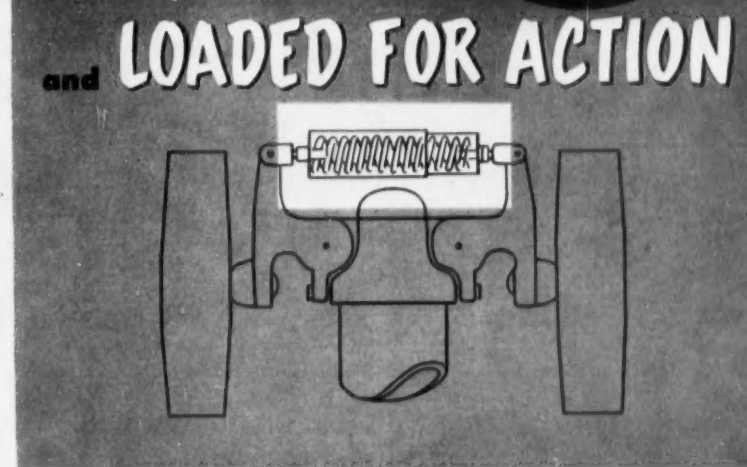
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simple in theory

practical in design . . .

and LOADED FOR ACTION



NEW spring loading technique provides positive control during mixing

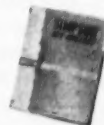
With the new F Series Simpson Mix-Muller we've added a new dimension to mulling. With it, full time control over mulling pressure is now practical—and simple. Here's how it works:

The muller wheels are suspended to receive pressure through a spring load. Mulling pressures ranging from 1600 to 4000 lbs.* can be brought into action at the turn of a wrench. And what's more, presettings are possible that will increase effective muller pressures as it is needed, or as the mix builds in strength during the cycle.

If your mix is dry, but not a powder . . . wet but not a fluid, it will pay you to find out more about the new Simpson Mix-Muller. Working for you on an hour by hour and day by day basis, controlled mulling can ring up a real savings in more efficient use of all mixture components—declare a dividend in product quality and uniformity. Write for details on a laboratory test on your material, or for our new bulletin on Simpson mulling and remember . . .

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* (On the 60 cu. ft. Mix-Muller)



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Celite Powders provide bulking action

3 to 10 times greater than any other inert mineral filler

POUND FOR POUND, Celite® diatomite powders supply more bulking action than any other inert mineral filler because their cubic volume is 3 to 10 times greater. Celite's unique "honeycombed" structure is composed of microscopic, irregularly shaped particles that won't pack down. In mass they weigh only about 10 lbs. per cubic foot.

That's why Celite is so widely used to add bulk and body to industrial formulations. For example, it extends

white pigments in paints and papers . . . it improves dispersion of insecticides and fertilizers . . . it fluffs up dry powders such as household cleansers.

Also, from Celite's "honeycombed" structure comes its great absorptive capacity. This characteristic is profitably utilized to keep powders free-flowing . . . to provide a medium for shipping or storing liquids in dry form. And because of the physical structure of its individual particles, Celite has become the outstanding

flattening agent for paints . . . it serves as a mild, non-scratching abrasive for fine polishes . . . it improves the surface appearance of plastics.

Which of the many Celite advantages can you use to build product performance or cut costs? A Johns-Manville Celite Engineer will gladly discuss your problem, without obligation. For his services or more information, write Johns-Manville, Box 60, New York 16, New York. In Canada, 199 Bay St., Toronto 1, Ontario.

*Celite is Johns-Manville's registered Trade Mark for its diatomaceous silica products.



Johns-Manville CELITE INDUSTRY'S MOST VERSATILE MINERAL FILLER

NEWSLETTER

Tariff battle is brewing. State Dept. has scheduled hearings March 28 on tariff concessions to Switzerland to compensate for higher import duties recently imposed on Swiss watches. Among the 16 items slated for lower duties: coal-tar dyes.

State Dept. has also added 40 items to the list of commodities on which tariffs will be negotiated with Japan.

•
And the long-simmering food additives stew may be coming to a boil. A bill introduced in the House last week by Rep. O'Hara (R., Minn.) and Rep. Priest (D., Tenn.) calls for prior approval of food additives by the Food & Drug Administration. Priest, chairman of the committee that will consider the legislation, says, however, that he's not irrevocably committed to prior licensing if food and chemical companies can make a good case for simple prior notification.

More bills are on the way. Rep. James Delaney (D., N.Y.) plans to introduce a food additives bill and one covering chemicals in cosmetics. And makers of packaging materials may also get in the act; their products, when used for food packaging, could well come within the purview of legislation governing chemical additives.

•
You'll be hearing more about kinetin. That's the name assigned to the chemical, just isolated and purified at the University of Wisconsin, that causes cells to divide. It's probably a fundamental component of plant and animal metabolic systems.

Derived from desoxyribonucleic acid (DNA), the chemical was discovered by accident in a four-year-old bottle of DNA. Fresh preparations of DNA do not contain the factor.

Significance: once the structure of kinetin is determined, it may be possible to synthesize an antikinetic—a modification that will stop cells from dividing, as occurs abnormally in cancer.

•
Establishment by Shawinigan Resins Corp. (Springfield, Mass.) of its own Marketing and Sales Division is a sign that this 16-year-old subsidiary of Shawinigan Products and Monsanto Chemical is growing up.

Heretofore, sales of the company's vinyl products have been handled by the two parent firms; but now the new division, under former Monsanto-Kasei (Tokyo) Vice-President Albert Dunning, will handle commercial development, technical service and sales.

•
The only chemical certificate of necessity issued recently by the Office of Defense Mobilization: \$36,800 at 50% to Allied Resins, Inc. (Conneaut, O.), for plastic products for defense use.

•
Maurice Travis, the allegedly Communist secretary-treasurer of the Mine, Mill and Smelter Workers, bowed to union local demands, resigned while his indictment by a federal grand jury is pending. "I do not acknowledge that there is the slightest foundation for the indictment," he says, and his resignation "was necessitated by an order of the

Taft-Hartley Labor Board, which denies our union the right to participate in elections and use other facilities of the NLRB."

•

Don't expect quick action on the government's appeal of the decision in the Du Pont-General Motors antitrust case. Chances are it will be late in April before the U. S. Supreme Court gets the trial record. Federal Judge Walter J. La Buy, whose ruling is being appealed, has granted defense lawyers 60 days to study the government's appeal papers and decide what portions of the trial record they think are necessary to the Supreme Court's review. The Justice Dept.'s appeal seeks review of only certain sections of La Buy's decision.

•

Aluminum Co. of America will spend \$35 million to expand capacity at Point Comfort and Rockdale, Tex.—\$15 million at the former location, to add one pot line and boost smelting capacity by 20,000 tons; and \$20 million at the latter, to add two lines and boost capacity by 45,000 tons. Construction will start shortly, and the new units are expected to be in production during the second quarter of 1956.

•

Nuclear activities are mushrooming in the New York area. Last week saw two major developments:

- American Machine & Foundry revealed plans for what it expects to be the "first nuclear reactor to be owned and operated by private industry." AMF says that several industrial firms—no names given—have been invited to participate on a coequal basis in its construction and operation. The Atomic Energy Commission must approve the choice of a site, but at the moment this much is definite: it will be a so-called "swimming pool" reactor like the one AMF is building for Battelle (*CW Newsletter*, Feb. 12)—i.e., it uses stainless steel-clad uranium-iron alloy fuel elements with ordinary water as a coolant and moderator. AMF is organizing the project, says it will ask for construction bids and submit one itself, granting the contracts on the basis of the best bids.

- Nuclear Development Associates (White Plains, N. Y.) acquired an 1100-acre hunting preserve in New York's Dutchess County for a proposed atomic research center to be known as Southern Dutchess Experimental Laboratory. Title to the property is in the name of Southern Dutchess Corp., a new subsidiary of the parent firm, which was organized in 1948 and acquired in part last year by David and Laurance Rockefeller. Contemplated activities of the new firm: design of equipment to produce fuels for nuclear propulsion—ships, planes, etc.—and for power generation; design of therapy and radioisotope production apparatus. Chief function is equipment and instrument design—not production of nuclear materials.

•

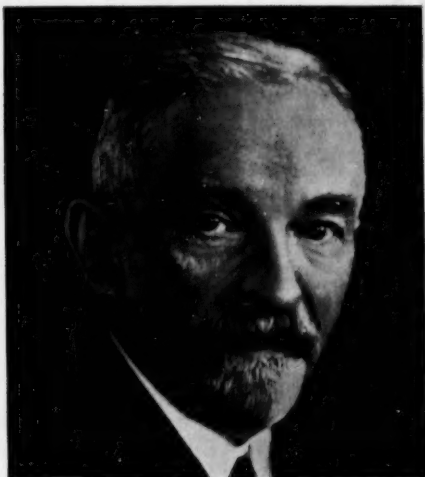
The new fluoride-containing toothpaste (*CW Newsletter*, Feb. 12) is Procter & Gamble's Crest. Containing stannous fluoride, the new paste is designed to inhibit decay in teeth of older children (above six years, since younger ones may swallow it) and adults.

The product was introduced this week into three test-market areas, and extension will depend largely on the response. P&G supports its product with clinical tests on thousands of adults and children over a two-year period, but it still must do a lot of selling to overcome the opposition implanted by antifluoridationists in large segments of the population.

. . . The Editors

What does "PERMUTIT" mean?

THIS is Robert Gans . . . About 50 years ago he discovered a new, simple method of softening hard water and coined, for the process, the trade name "PERMUTIT"

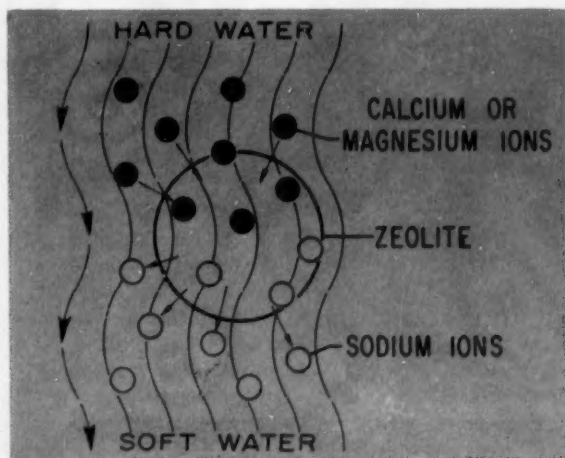


Robert Gans

(rhymes with "compute it"), derived from a Latin verb meaning "to interchange."

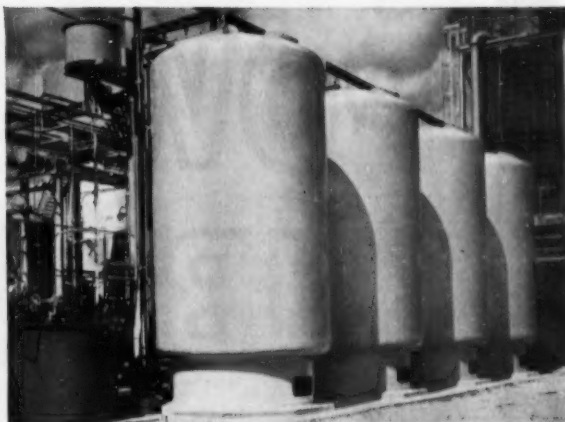
Here's how it works...

Gans found that certain zeolites (insoluble, granular materials) would take the hardening mineral elements, calcium and magnesium ions, out of the water and exchange sodium ions in their place. He also found that the zeolite or "ion exchanger" could be used over and over by simply regenerating it with a solution of common salt.



It's big business...

Ion exchangers have come a long way in recent years. Certain combinations remove *all* mineral solids ("demineralization") . . . producing the equivalent of distilled water at low cost.



Thousands of PERMUTIT units now protect steam boilers in power plants . . . and serve hospitals, restaurants, municipalities, refineries, chemical plants, many other industries.



Compact, automatic PERMUTIT softeners bring soft-water luxury to thousands of homes. Soft water washes clothes cleaner, saves soap and prevents scale in heaters and piping.

New, broader uses...

Water treatment is now only one of many uses of PERMUTIT ion exchange equipment. Other applications include—removing impurities from foods or drugs, recovering metals from plating baths, separating rare metals from ores . . . and many others. If ion exchange might solve *your* problems, write: The Permutit Company, Dept. CW-2, 330 West 42nd St., New York 36, N. Y.

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PERMUTIT

Rhymes with "Compute it"

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...THE COMPLETE QUALITY LINE...POWELL VALVES...THE COMPLETE QUALITY LINE...

...THE COMPLETE QUALITY LINE...POWELL VALVES...THE COMPLETE QUALITY LINE...

POWELL LUBRICATED PLUG VALVES

FIG. 3059G—300-Pound
Steel Flanged End Valve.
Sizes 6" to 12".

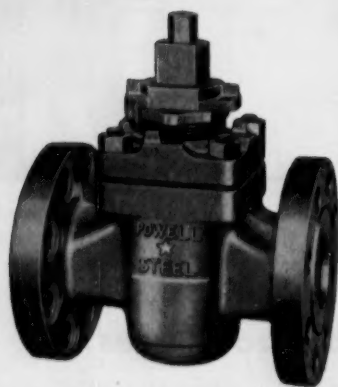


FIG. 1559—150-Pound
Steel Flanged End
Valve. Sizes 1" to 4".



POWELL VALVES...THE COMPLETE QUALITY LINE...POWELL VALVES

Powell Valves—the *complete* quality line—offer many outstanding features in these new Lubricated Plug Valves, such as quick and sure operation and a positive seal when the valve is closed.

Valves are available with screwed or flanged ends; single, screwed and bolted gland types, and in Semi-Steel, Carbon Steel, Bronze, Ni-Resist, Monel Metal, and Stainless Steel. Semi-Steel valves are rated 175 and 200 pounds W.O.G.; Steel valves, 150 and 300 pounds

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BUSINESS & INDUSTRY. . . .



REED: Over his dire warnings on consequences . . .

First Hurdle Cleared

The House of Representatives this week passed the three-year extension of the Trade Agreements Act, giving the Administration its first major legislative victory in its fight to liberalize foreign trade policy.

President Eisenhower, under the bill (as passed), will have the power to cut all tariffs 5% per year for three years, to cut tariffs to 50% on goods being imported only in negligible quantities, to lower all tariffs to a 50% ad valorem ceiling.

The tariff bill had an unexpectedly close shave in the House last week because many members of both parties from districts suffering from import competition bolted from party leaders.

The Administration forces at one point defeated a move to open the bill to the one-amendment-only procedure (supported by ranking Republican member of the Ways & Means Committee, Daniel Reed, of New York), then beat down (by one vote)

a move to open the bill to floor amendments.

It took three separate roll calls and an urgent plea by Speaker Sam Rayburn (D., Tex.) to smother the latter move, but exponents of gradually liberalized tariffs were exuberant over his victory. Why: opening the Trade Agreements Act to amendment would have loosed another barrage of objections that probably would have demolished its tariff-cutting effect. The House then went on to defeat a move to send the bill back to committee—where it might have been stalled.

The unanticipated strong opposition in the House heralds a tough, close fight in the Senate where the traditionally freer-trading Democrats have a much narrower majority. That means the Administration will have to lean much more heavily on Republican support. (This will be offset to some extent by the fact that Senators are generally less committed than congressmen to the defense of spe-

cific local industries against competition from imports.)

Most observers, however, expect the bill to squeak through the Senate without major amendments.

The Administration is elated by the fact that the bill cleared the House virtually without amendment. Opponents of lower tariffs fought hard for additional protection for industries "essential to defense," for a tougher "escape clause" to make it easier for domestic industry to get tariff relief, for special protection for specific products. Segments of the chemical industry actively supported efforts to limit the President's tariff-cutting power under the bill. But all the key amendments were beaten down.

Whistling in Moscow

Russia claims to have boosted its chemical output to all-time record peaks in 1954. That's the crux of the report recently issued by the U.S.S.R. Central Statistical Administration.

Over all—the chemical industry exceeded its "goal" by 3%, but certain sectors of the industry scored especially noteworthy capacity gains. These include: caustic soda, 11% over quota; soda ash, 10% ahead of schedule; mineral fertilizers, up 16% over anticipated capacity; pesticides, over quota by a staggering 35%; dyes, 7% ahead of plan; synthetic rubber, 1% in excess of expected capacity; alcohol, some 8% in advance of plan.

Output of chemical equipment rose 14% over 1953 records.

The Statistical Administration further admitted that its 1954 output plan was overfulfilled in synthetic ammonia, nitrogen fertilizers, superphosphates and synthetic rubber. But goals for calcium carbide and potash were not met.

Last year's increase in new capital investment also failed to live up to expectation. This, however, *Izvestia* rationalizes away, explains how chemical companies last year were consolidating their recent expansion advances.



LYN CRAWFORD, MCCRAW-HILL

BOARDED-UP CARBONIC PLANT: As cobwebs gather dust, high court plans . . .

Look-Back at Forced Sale

Either this spring or next fall, the U.S. Supreme Court will try to tie up the loose ends of the carbon dioxide antimonopoly case. The high court has agreed to hear arguments by attorneys for the Justice Dept. and the Liquid Carbonic Corp. in which both sides will ask for revision of last year's court order on use of two plants pending their sale.

Under the consent decree ending the principal phase of this civil antitrust suit, a court-appointed trustee was to sell the two plants—in New York and Indianapolis—to persons or firms who would use them for manufacture of carbon dioxide or dry ice (CW Newsletter, March 15, '52). No prospect could be found for the New York plant (see cut, above). There were "nibbles" for the Indianapolis plant, but in the end nothing came of them.

So last fall, the Justice Dept. asked the U.S. District Court in Brooklyn for an order that would have required Liquid Carbonic to sell the plants to anybody who would purchase them for any use whatever. This the court refused to grant; but it did issue an order forbidding Liquid Carbonic from using the plants for either manufacture or distribution of carbon dioxide or dry ice.

Both Parties Unhappy: In effect, the trial court said Liquid Carbonic could retain title to the properties, but they could not be used for furtherance of the allegedly monopolistic practices banned in the original decree. Neither party liked this ruling. What they'll try to persuade the Supreme Court:

- The Justice Dept. will contend that the company should be forced to sell the plants to any buyer.

- Liquid Carbonic will protest that the district court exceeded its authority by forbidding the plants' use for carbon dioxide and dry ice production.

The antitrust suit—in which the government sought "divestiture of illegally acquired plants and compulsory licensing of abused patents"—was filed in 1948 following issue of a Federal Trade Commission cease-and-desist order against the same four producers: Liquid Carbonic, Air Reduction, Pure Carbonic, and Wyandotte. The Justice Dept. asserted that of the more than 200 million lbs. of carbon dioxide and more than 100 million lbs. of dry ice then being produced in the U.S. each year, three companies—Pure Carbonic, Liquid Carbonic, and Wyandotte—were selling more than 75%.

In another action last week, the Supreme Court upheld FTC's order cracking down on Rhodes Pharmacal Co. (Chicago) for claims that its "Im-drin" product has therapeutic value in treatment of arthritic and rheumatic conditions. The high court said FTC was right in holding that Rhodes could claim for Imdrin nothing more than temporary relief from pain.

Courting Investment

Italy's Budget Minister, Ezio Vanomi, stated last week that a more liberal policy toward foreign investors is currently being studied by the Italian government.

Speaking to the American Chamber of Commerce for Italy, Vanomi maintained that the next meeting of the Italian Cabinet has, as a priority item for consideration, a new bill under which exporters would be allowed to export profits from Italy.

Passage of such a bill, needless to say, would be a tempting lure to U.S. chemical makers casting about for foreign markets to enter.

Two-Way Street: At the same time, Vanomi would urge Italian chemical exporters to try to expand sales in the U.S. in an effort to help Italy toward a better trade balance. "I am convinced that the North American market is vast enough to absorb more Italian products," he says. "In general, a 5½% annual increase is entirely within the realm of possibility."

Reaction from Italian manufacturers is not so confident, however. "We still hope to broaden our U.S. markets in 1955," points out one Italian chemical maker, "but we're not counting on it as a bread-and-butter business." Expansion in South America (such as Montecatini's recent move to Venezuela) is much more practicable; a number of Italian companies are also interested in Indian markets.

But such moves, howsoever sound, don't impress Vanomi. Reviewing Italo-American trade relations, he notes last year's Italian trade deficit was over \$165 million. (Imports, \$290 million; exports, \$125 million.)

"Chemical companies could lower the dollar gap through a concentrated effort to increase U.S. sales," he states. "The Italian government will do its part to encourage the flow of dollars eastward; but in the long run, much of the burden must be shared by industrial leaders."



ATTORNEY GENERAL BROWNELL: In antimonopoly enforcement, he charts . . .

Ground Rules on Mergers

Schenley Industries, Inc., is the immediate target; but the Justice Department's new antitrust civil suit also documents some critical observations about the three other big distillers, may delineate the criteria that the Justice Dept. will use in enforcing the 1950 antimerger amendment to the Clayton Act.

Objective of this suit: to force Schenley to divest itself of its recently acquired control of Park & Tilford Distillers Corp.

Filed in federal district court at Wilmington, Del., the action is noteworthy, among other reasons, because it's the first time that the Justice Dept. has resorted to the courts under the 1950 law. The Federal Trade Commission—which also is responsible for enforcing this act—is still plugging away at the Pillsbury Mills case; and these two actions are likely to spell out the current merger-acquisition limits for all industry.

Chemical Products Involved: To a slight extent, the Schenley suit spills over into the chemical process field. While liquor is by far the largest sales item for both firms, Schenley also makes pharmaceuticals and Park & Tilford produces cosmetics, perfumes and a household dye.

Up to late last week, Schenley had

not replied to the allegation by Attorney General Herbert Brownell, Jr., that Schenley's purchase of 171,178 shares of Park & Tilford stock last December "may have the effect of substantially lessening competition or tending to create a monopoly in the production and sale of whisky."

In buying stock control of Park & Tilford, Schenley walked in where Seagram Distillers—another of the "big four"—reportedly decided not to tread. The liquor trade says Seagram had made overtures toward purchase of Park & Tilford, but backed away when the government's trustbusters threatened it with litigation under the 1950 law. Schenley is said to have known about this before it arranged to buy about 70% of Park & Tilford's outstanding shares.

Liquor Leaders' Limit: It requires no eye strain to read into Brownell's complaint a warning to the big four liquor companies that a line is being drawn against further acquisition of competitors, large or small.

Without ticking off their names, the complaint says:

"Since 1933, concentration of all phases of this business in the hands of these four companies has been constantly increasing. A substantial proportion of the growth of each has

been through acquisitions or mergers."

Add Park & Tilford to Schenley, the Justice Dept. says, and you get this picture of a bigger "big four": Among them, according to government figures, they would have 59% of the industry's capacity; 66% of 1953 whisky production; 72% of that year's whisky bottling; 54% of the industry's storage, and 75% of 1953 whisky sales.

In a closer focus on Schenley and Park & Tilford's combined status, the government figures that these two firms together would have 20.5% of the industry's production capacity, 26% of actual production, 19% of sales volume. So far, those figures stand as the tentative yardstick on legality of merger of competing concerns.

Caught in the Crossfire

Whether trade association officials should sit on the Commerce Dept.'s Industry Advisory Committee came under legislative crossfire last week.

Attempting to clarify his charge that Commerce Secretary Weeks was in great danger of "encouraging the growth of monopolies" by allowing the seating of trade officials, Assistant Attorney General Stanley Barnes said he has no reason to believe that the Commerce Dept. "is not observing certain safeguards"—but warns that the Antitrust Division is keeping a stern eye on the matter.

Safeguards (set up by the Justice Dept. and passed on to Commerce in Nov. '53) include:

- Statutory authority for employment of such committees or an administrative finding that it is necessary to utilize the committee to perform specific statutory tasks.
- Formulation (or initiation) of the agenda for such committees by the government.
- Necessity of a federally appointed committee chairman.
- Recording of full minutes of all meetings.

Barnes maintains that regardless of such definite requirements, Secretary Weeks' newly set policy stands a good chance of promoting antitrust violations. The Dept. of Justice will raise no objection to the inclusion of trade organization representatives; its position simply is that the move could cause trouble.

EXPANSION. . . .

Potash: National Farmers Union will be in production of potash by 1956, its president, James G. Patton, revealed to the annual convention of the Rocky Mountain Farmers Union last week. Establishment of potash, phosphate, and nitrogen-producing plants are all part of the Union's 10-year development program estimated to cost \$25 million.

The farm organization, claiming 250,000 farm families as members, has 14,000 acres under lease in southeast New Mexico where core drilling has shown extensive potash beds. Kerr-McGee Oil Co. (Oklahoma City) and the Farmers Union are developing the project as a joint enterprise.

Ammonia: The Quebec Ammonia Co., Ltd. plans to build an ammonia fertilizer plant at Contrecoeur, Que. Cost: \$8.5 million. Design engineering will begin immediately; capacity is listed at 125 tons/day of ammonia; the company hopes to be in production by mid-1956.

Petrochemicals: Frank M. Keller, vice-president of the Utah Construction Co., has confirmed reports that his company plans to build a petrochemical plant in conjunction with a steam-electric plant in the San Juan Basin, New Mexico. Asked when development or construction would start, Keller refused to make any firm commitment. Utah Construction has already applied for water rights, however, stated in its application that the water would be used for petrochemical production in the "near future."

Cellophane: Olin Mathieson Chemical Corp. has postponed plans to build a \$20-million cellophane plant at Red Bluff, Calif. Reason for the action was not revealed, but company spokesmen insist that the decision not to build now is in no way connected with the water pollution requirements regarding possible contamination of the Sacramento River insisted upon by the California Regional Water Control Board.

Ammonium Nitrate: Construction has started on Brea Chemicals' ammonium nitrate plant at Brea, Calif. Representing a \$2-million investment, the plant is designed for 50,000 tons/

year of ammonium nitrate; completion is scheduled for midsummer.

Ammonia: A group of Canadian industrialists say they plan to build a \$15-million ammonia plant in the pine bend area, just south of St. Paul, Minn. Designed to produce 200 tons/day of nitrates, the plant will be located adjacent to Great Northern's \$25-million oil refinery—now under construction.

COMPANIES. . . .

American Potash & Chemical Corp. has registered \$7 million in convertible subordinated debentures, due 1970, with the SEC.

The proposed public offering will be managed by Lehman Bros. and Gore, Fogan, & Co.; proceeds will be used to redeem bank loans and for general corporate expenses.

More year-end company earnings:

• Rohm & Haas Co.: sales, \$132.6 million (as against \$120.6 million in

1953); net profit, \$12.4 million (compared with \$6.5 million); earnings/share, \$12.52 (as against \$6.47).

• American Cyanamid Co.: sales, \$397 million (compared with \$380 million in 1953); net profit, \$27.0 million (as against \$27.4 million); earnings/share, \$2.95 (\$3.15 in 1953).

• Parke, Davis & Co.: sales, \$109.9 million (as against \$109.8 million in 1953); net profit, \$10.4 million (compared with \$9.3 million); earnings/share, \$2.40 (as against \$1.91).

Latest six company incorporations to file in Dover, Del., list these capitalizations:

• Squaw River Uranium Mines Corp., \$300,000.

• Universal Uranium Co., 10,000 shares, no par value.

• Uarco Uranium Corp., \$300,000.

• Cinderella Uranium and Oil, Inc., \$6000.

• Fortune Uranium Exploration Corp., 1000 shares, no par value.

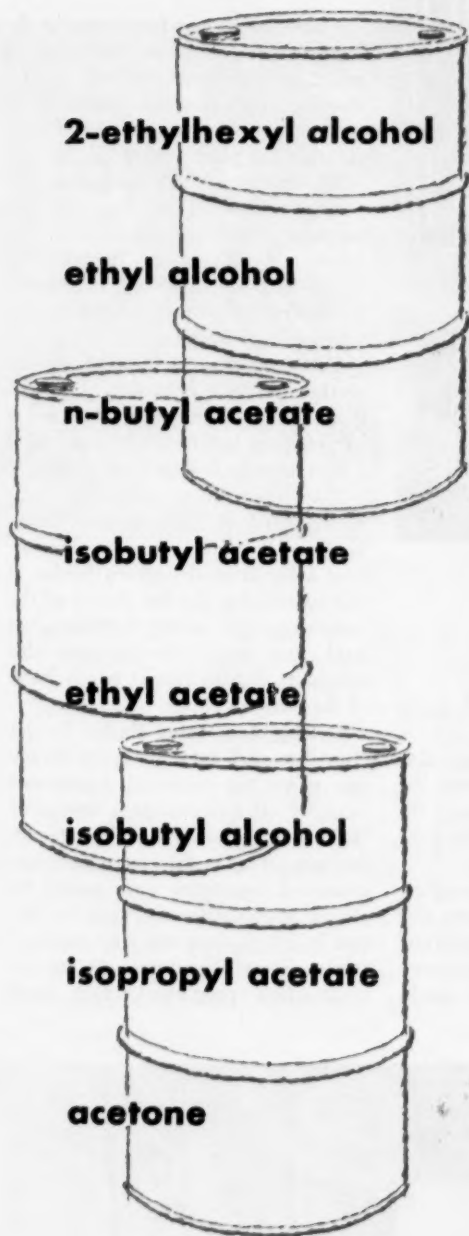
• Gulf Uranium Corp., \$20,000.

**Pastoralism with a Purpose**

RURAL SETTING at Tide Water Associated Oil Co.'s Curry's Woods, N.J. plant includes 40 goats, two cows, a bull, an aging horse, 300 chickens, and a dozen dogs of assorted breeds. Owner of the livestock: Alphonse DeLieto, a night

watchman at a nearby coffin factory.

Tide Water Oil's object in encouraging his husbandry: grass surrounding its storage tanks is a fire hazard; animals do a superb job of keeping it nibbled short.



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ATLAS BUILDING: At New Murphy Road and Concord Pike.

It's All in the Planning

Friday, a fortnight ago, was moving day at Atlas. From its former quarters in the Delaware Trust Building in Wilmington, the company migrated some four miles out on the Concord Pike to a new home office, built at a cost of \$3.5 million, complete with recreation hall, tennis courts and a swimming pool.

In tonnage alone, the move was impressive enough: closing up work on Friday, the company arranged transportation for 4000 pieces of furniture (from safes to clothes trees), opened up business the following Monday with nary a break in routine.

(In all, it took 175 van loads to make the move—50 men and over 2000 cartons of smaller gear.)

And in selling the switch to employees, the company was equally smooth, well organized. From the moment it was first decided that Atlas would move to the suburbs (its lease was running out, and downtown Wilmington offered no reasonable office facilities), workers were consulted on all planning details.

Employee clubs were called in to set up their own cafeteria arrangements (officials realized they'd be risking serious trouble in that respect, since many old-time workers had set lunch-time habits). They were also given the option of drafting their own rules (with official approval) on use

of the swimming pool and tennis courts.

Biggest Single Headache: Employee transportation was a poser. Far off the downtown traffic center, the new office building was hard for some workers to reach.

Management arranged for regular public buses to reroute their runs past the Atlas Building during morning and evening rush hours and provided employees with hourly schedule cards.

B & I

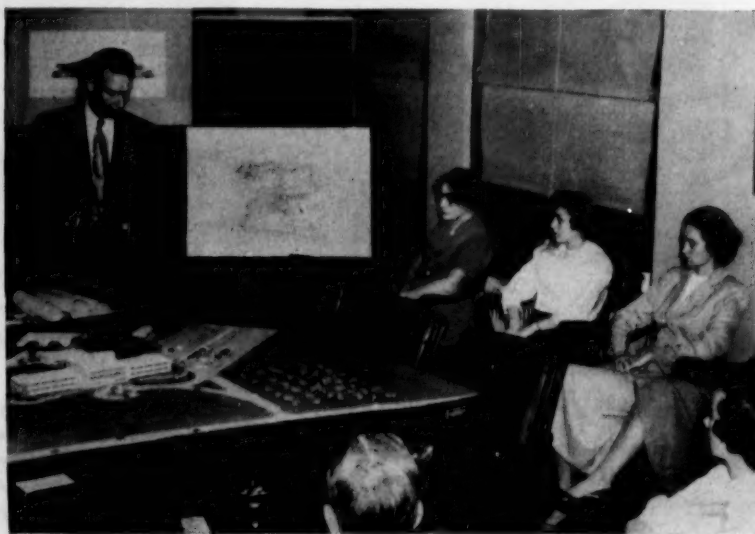
To facilitate matters for those who desired to form car pools, the industrial relations department set itself up as a clearinghouse for the entire staff, made special arrangements for a shuttle from plant to railroad stations.

The question of working hours was put to the workers, too. Asked to vote on starting time, quitting time and the number of coffee breaks, they decided on an 8:15-4:30 day—not necessarily the choice of top management, but the schedule now adopted.

For those who might want to shop on the way home from work, the company canvassed the area, compiled a list of stores in the vicinity and added a map to make finding them easier.

Even the subject of paydays was reconsidered in light of the inconvenience it might cause employees—now away from downtown banks. It was switched to the last Friday of the month (a night on which Wilmington banks stay open); the company also offered to deposit checks in any bank of the worker's choice.

Getting Acquainted Early: To get the office staff into the spirit of the new move, the personnel department busied itself to inculcate a feeling of "belonging." A scale model of the office was set up in the reception room; groups of employees were invited to attend get-together meetings to discuss building plans and floor arrangements. Some department heads, as construction progressed, took staff



EMPLOYEES: Received a scale-size introduction to new facilities.



OBVIOUS CONTRAST: Former lunchroom crush, current dining comforts . . .

members out to the office site and talked over seating arrangements as well as possible improvements in facilities.

When it became obvious that window locations were preferred, most department heads decided to reorient their thinking (they'd chosen such positions for themselves), offered the window seats to company secretaries, clerks.

Name cards were printed for every staff member and placed on his (or her) desk the first day in the new office. Building tours were arranged the

first week of operation by specially trained guides.

Thought To Neighbors: Considerable thought was given to the possible impact the move might have on residents in the area. A personal letter was mailed to every householder in the vicinity, expressing Atlas's hope of good neighbor - resident relations. Storekeepers were alerted; special racks were set up to sell local and out-of-town newspapers in the lobby; gas station owners were consulted on the possibility of working out car washing arrangements with employees.

Throughout the planning stages, responsible management tried hard to keep in touch with employees and their reactions. Realizing they couldn't hope to think of everything themselves (e.g., they forgot about making post office facilities available), they welcomed employee suggestions, struggled to report all developments.

With three exceptions, Atlas's 450 main-office employees accepted the move graciously. What might have proved to be a costly management decision (in terms of personnel relations) was turned into an asset.



. . . old crowded offices, new recreation rooms.



SEMI PHOTOS, WASHINGTON

GAS-COKE'S SWISHER: For earnest young union leader, personal demotion doesn't dim his zeal; he still champions oil-chemical merger that may spark . . .



Desperate Drive for Locals

Remember the crusading zeal that helped the CIO organize workers at "Big Steel," the "Big Three" auto makers and the "Big Four" rubber companies back in those strife-steeped days of 1936-'37-'38? That's the spirit that CIO leaders Walter Reuther and Elwood Swisher hope to kindle this year for new and more determined unionizing drives in the oil and chemical industries*. To pave the way for these drives, both men are eagerly pushing merger moves that will mean loss of their present jobs.

There's a distinct parallel between Reuther (president of the CIO) and Swisher (head of the CIO's United Gas, Coke & Chemical Workers). Both are earnest, relatively youthful union leaders who believe in labor unity and are willing to give up something to achieve it.

'Clincher' Claimed: In Reuther's case, the battle is virtually won. But when he signed an agreement with AFL President George Meany to merge their two federations, he wrote an end to his currently lofty job in the

American labor movement. When the AFL and CIO finally join forces late this year, Reuther will hold only a single union (United Auto Workers) presidency.

In the same fashion, Swisher is due to be demoted early next month when his union teams up with the Oil Workers International Union (CIO). He'll step down as president; and his tone and manner in a premerger interview last week in Washington indicated that he'll be happy to do so. Swisher appears to be little concerned about his own future—he told CW that he sees the merger as attainment of his long-time goal of consolidating unions for the good of labor.

There has been opposition within both the oil and the chemical unions, but Swisher is now confident that unification will be ratified at the joint convention in Cleveland next week, at which Reuther will be the opening speaker. And last fortnight, the move picked up added momentum from the Meany - Reuther decision. Said Swisher: "That clinches our position."

Dissension Foreseen: "All we need," he went on, "is a two-thirds vote by the joint convention to adopt the proposed constitution, and we're going to get it." He figures that the only major



stumbling-block will be the provision that members of the policy-making executive council be appointed by the president of the new union, instead of being elected by rank-and-file.

Swisher is willing to accept this provision for the sake of harmony, even though he concedes that the president of the new union will be O. A. (Jack) Knight, now head of the Oil Workers (CW, Feb. 19, p. 18). "I want to get off on the right foot without a political fight that could leave scars for the future," he says.

But there are some who feel that

* Rumored as primary targets in these industries: Standard Oil of N.J. and Du Pont, both the biggest in their respective fields and both only partly unionized to date. Reuther reportedly feels that the CIO Oil & Chemical Workers Union-to-be will have to win recognition at Esso and Du Pont plants to hold onto its charter for the double jurisdiction.

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BENZENE PHOSPHONIC ACID

(Phenylphosphonic Acid)

($C_6H_5PO(OH)_2$)

W. M. 158 Sp. G. 1.475 (4° C.)

M. p. 158° C. Colorless crystals

Strong dibasic acid; $pk_1 = 1.85$; $pk_2 = 7.2$

Soluble in water, alcohol, ether, and acetone
Insoluble in benzene, hexane and carbon-tetrachloride

Stable in air. Decomposes at 275° C. with
formation of benzene

Forms metallic salts

Solubility in water at 25.5° C.:
40.3 gm/100 gm water

Suggested uses are for non-food applications, such as:

Solid acid, intermediate for forming metallic salts used as anti-fouling agents in paints, catalyst for urea formaldehyde and related resins.

BENZENE PHOSPHINIC ACID

(Phenylphosphinic Acid)

($C_6H_5P(O)(OH)_2$)

M. W. 142 M. p. 82-84° C.

Sp. G. 1.376 (29° C.)

Strong monobasic acid; $pk = 1.47$

Colorless crystals

Soluble in water, alcohol, and acetone

Slightly soluble in ether

Stable in air. Decomposes at 200° C.

Slight characteristic phosphine odor

Forms metallic salts

Oxidizes to the phosphonic acid with ordinary
oxidizing agents such as hydrogen peroxide
and nitric acid.

Solubility in water at 25.5° C.:
7.7 gm/100 gm water

Suggested uses are for non-food applications, such as:

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To improve film properties of cured polysiloxane resins

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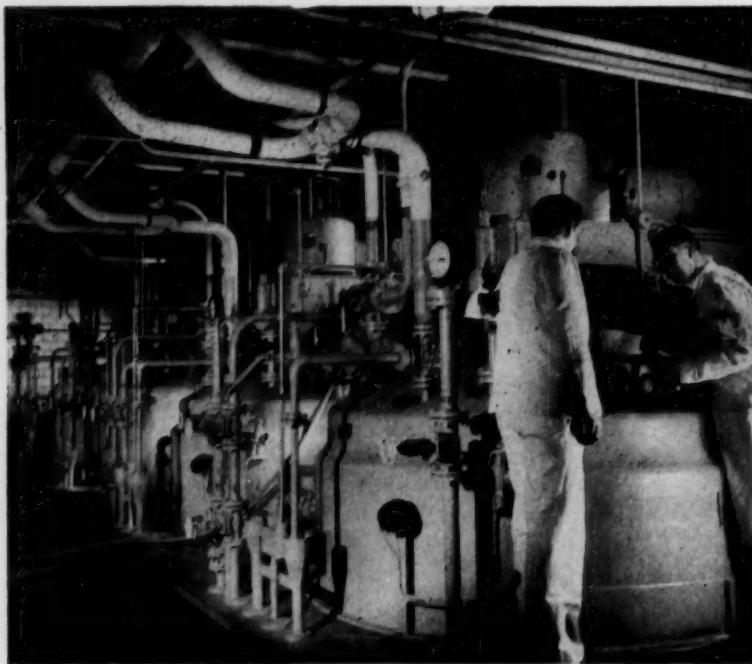
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B & I

ratification of the proposed constitution as it now stands can't fail to lead to friction. Principal spokesman for this school of thought is Swisher's vice-president, Roberts Buchanan, who recently warned that "a host of problems" should be smoothed out before the merger or "they are bound to cause dissension afterwards." In a letter sent to all Gas-Coke locals, Buchanan charged that the unification move is shaping up more like an absorption of Gas-Coke rather than as "a fair and honorable merger."

Stronger Union Needed: Swisher won't say so, but he's obviously unhappy about Buchanan's recalcitrance. Swisher feels that the sacrifices (including loss of rank) to be made in welding the two unions together will doubtlessly be well worth these principal gains:

- Stepped-up organizing in both industries. He figures there are about one million nonunion workers in the combined jurisdictions that a strong union—with greater funds and more manpower—can catch in a drive to set up new locals at oil and chemical plants.

- End of jurisdictional problems, such as the one posed by petrochemical plants and by chemical units adjoining oil refineries. Where there used to be much confusion and cross-purposes in separate operations, the new union should be able to work in both domains, coordinating organizing and bargaining efforts to the benefit of both groups.

Chemicals Get Priority: The AFL-CIO merger plan calls for people from CIO (possibly Reuther himself) to take charge of the over-all organizing program; and Reuther has declared that the chemical industry should get particular attention on this score. The new oil-chemical union will be the focal point for this work.

And although Swisher will lose his presidency, he'll still be directing CIO activities in the chemical field. He's in line for a special position—executive vice-president of the new union—expected to be created for him at next week's convention. And he feels that with the horsepower of the oil-chemical union and the successor to AFL and CIO behind him, he'll be able to start catching up with other industrial unions that he considers well ahead in organization and bargaining.

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others, made to order

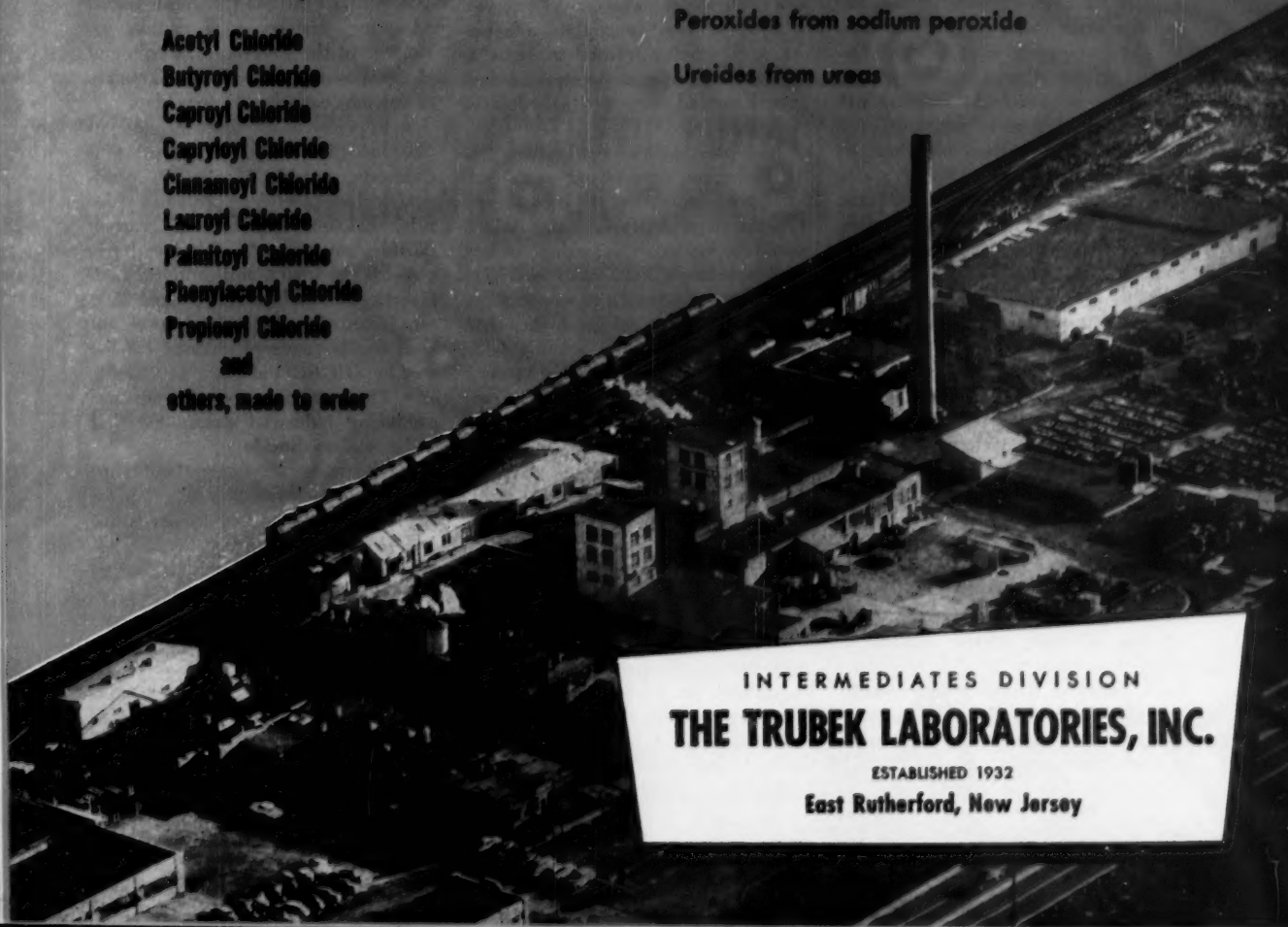
Amides from amines or amino acids

Esters from alcohols

Ketones from aromatic hydrocarbons

Peroxides from sodium peroxide

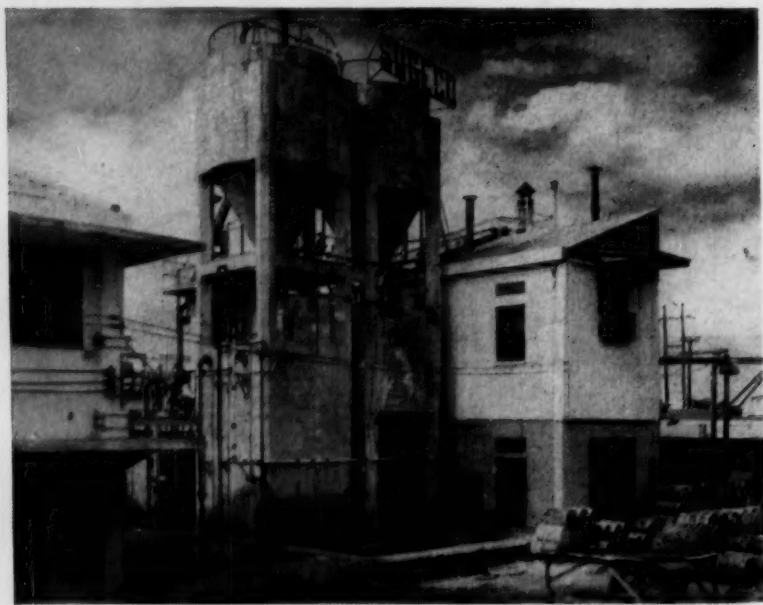
Ureides from ureas



INTERMEDIATES DIVISION
THE TRUBEK LABORATORIES, INC.

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SUGECO CAUSTIC UNITS: The Islands' single major chemical-producing facilities.

Generous Gesture?

U.S. Chemical makers stand to suffer by the Philippine Trade Agreement bill the State Dept. proposes to send to Congress early next month. Designed to strengthen a less-than-strong Philippine economy, the measure will permit both nations to gradually raise tariff barriers—give the Philippines the option to elevate its tariffs at a rate four times faster than the U.S. the first 10 years the plan is in operation. Effect, State Dept. spokesmen hope, should be twofold: the Philippines will be supplied with sorely sought revenue, its infant industries (including the chemical industry) will be protected during the years they need to gain footholds in world markets.

In 1953, U.S. exporters shipped \$32 million in chemicals to the Islands; and the total is estimated to have increased some 10% last year. Imports of chemicals from the Philippines, on the other hand, have hovered around \$1.5 million.

Compromise Offered: Actually the State Dept. proposal is a compromise between extreme views. Philippine negotiators went to Washington seeking a "selective free-trade agreement"—they wanted the U.S. to maintain open and free markets for Philippine products, but at the same time asked to be allowed to apply tariffs on U.S.

products that would compete against new Philippine industry.

Wary of tariff-touchy manufacturers, U.S. officials refused to agree in toto to the Philippine demands, suggested instead a revised schedule of tariff rates.

To a plea to offset the revenue loss the Philippine government would suffer from elimination of the present 17% tax on monetary exchange (which would be voided with passage of any tariff agreement), U.S. planners were more sympathetic. They would allow a tide-over import tax (no higher than 17%) on a gradually declining basis directly proportional to rising tariffs.

The Philippines would still be permitted to retain internal taxes, too—a concession aimed at holding down any possible drain on dollar reserves. This proviso would further permit erection of tax barriers against importation of any product that stands to "harm local producers"—without violating the tariff schedule as agreed.

How Will Chemicals Fare? In the face of such an obviously altruistic agreement on the part of Washington, it's difficult to believe that the Filipinos could object seriously.

U.S. chemical makers may be harder to convince, however. Though feeling from most quarters now is

"there's nothing to fear yet," the proposed agreement could wreak hardship a few years hence on some U.S. manufacturers. Reason: a number of local Philippine specialty producers have been holding off expansion plans until the new law is put into effect. When the go-ahead is given, they're likely to start new construction immediately.

Right now, chemical production in the Islands is meager—a strong argument in support of a "favored tariff" system. There are only four companies currently producing heavy chemicals, none producing fine chemicals except on a laboratory scale. Included:

- Chemical Industries of the Philippines, located in Polo, a suburb of Manila. Daily output of sulfuric acid is 7-7½ tons; capacity is listed at 10 tons. Most of the sulfur is imported from Texas—about 600 tons/year.

- National Power Corp.—a government-owned company—which operates a fertilizer plant at Maria Cristina, Mindanao. This plant also produces sulfuric acid for captive use in making ammonium sulfate.

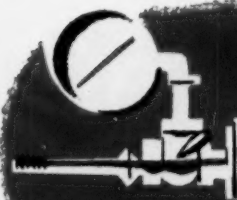
- Maria Cristina Chemical Industries, Inc.—first company to take advantage of the government's policy of cheap power for industry. Capacity of calcium carbide: 27 tons/day.

- Superior Gas and Equipment Co., Inc. (SUGECO) located in Mandaluyong, outside Manila. Its products include acetylene, calcium chloride, calcium hypochlorite, carbon dioxide, caustic soda, chlorine, ferric chloride, hydrogen and muriatic acid. Caustic is turned out at a rate of 2500 tons/year; the Philippines' total annual requirements of chlorine can be met by SUGECO alone.

- There are also several companies producing industrial gases, one that makes carbon dioxide.

In the main, however, the Philippine Islands' chemical production today isn't large; most of its needs are met by U.S. or Japanese firms. That means that U.S. legislators are virtually bound to take a charitable view in regard to any tariff agreement; U.S. producers are limited to theoretical arguments in opposition.

What the trade bill will eventually mean to chemical producers here is open to conjecture. But it's a good guess that it will pass Congressional hearings with little amendment.



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In plasticizers for polyvinyl chloride—1,4-Butanediol gives properties unobtainable with the shorter length glycols. For example, a 1,4-butanediol-adipic acid plasticizer tested against standard polymeric plasticizers shows excellent resistance to migration, outstanding ease of incorporation into the polymer, good low temperature properties.

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In polyesters—1,4-Butanediol has given resins, fibers, finishes, and lacquer raw materials of superior physical properties.

In other uses—1,4-Butanediol is a solvent and humectant in inks...is a chemical intermediate for solvents, pharmaceuticals, and vinyl monomers.

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As a Corrosion Inhibitor—Butynediol is effective alone or in blended formulations as a corrosion inhibitor for mineral acids, especially sulfuric acid.

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Other Promising New Products Available in Development Quantities

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 $\text{HOCH}_2\text{CH}=\text{CHCH}_2\text{OH}$

1,2,4-BUTANETRIOL
 $\text{HOCH}_2\text{CH}(\text{OH})\text{CH}_2\text{CH}_2\text{OH}$

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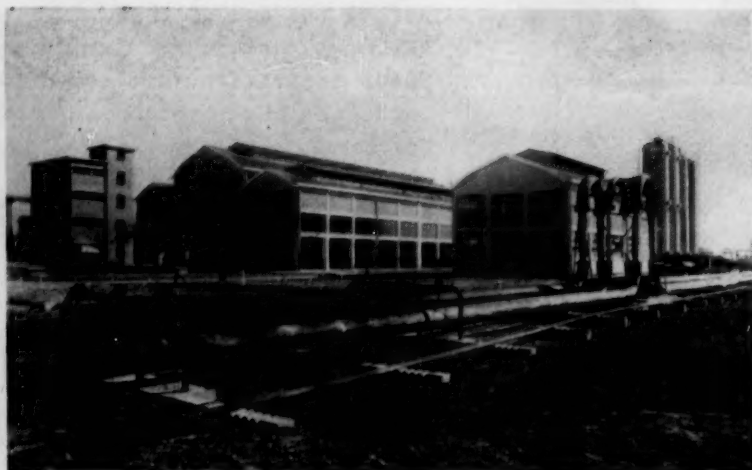


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BUSINESS & INDUSTRY



AT FERRARA: Montecatini is turning out synthetics.

FOREIGN

Synthetic Fibers/Italy: Italy's chemical industry scored impressive gains in synthetic fiber production in 1954. Output of nylon, Perlon, etc., increased 65% over 1953 (to 3.5 million kgs.); production of polyvinyl fibers (not produced industrially in 1953) jumped to 800,000 kgs.

Moreover, a host of new plants are due onstream this year. Orsi Mangelli will increase production of "Forlion" (a polyamide fiber) from 45,000 to 60,000 kgs./year; Montecatini will start to turn out Dacron at a new plant in Casoria; Snia Viscosa will begin manufacture of another polyamide known as "Rilsan." At a later date: Cisa Viscosa, Chatillon and Bemberg will build plants to produce synthetics.

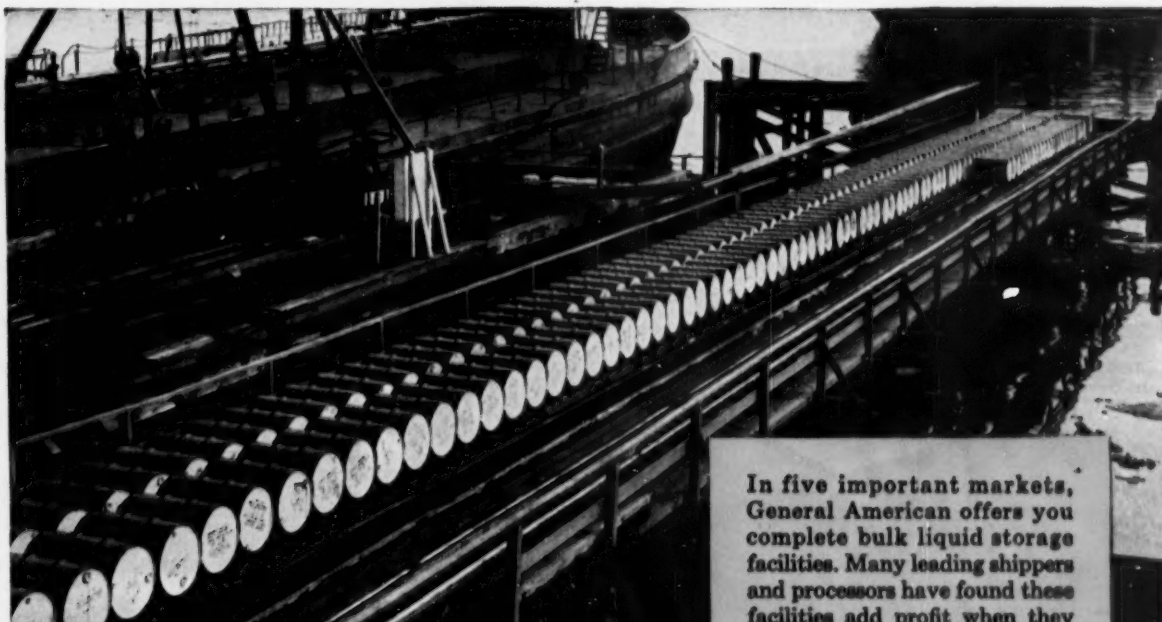
Exports/Japan: Much of the synthetic support of Japanese chemical exports was removed last week when Japanese Finance Minister H. Hizato Ichimada pledged himself to abolish the "special trading formula" that commits Japanese producers to use profit from imports to cheapen exports. Also included in the government's over-all plan to normalize trade and foreign exchange systems: a six-year economic plan aimed at balancing Japan's international accounts.

Atomic Energy/India: India's first \$2-million nuclear reactor will be ready by 1957 according to the head of the Chemical Division of the Indian Atomic Energy Commission. Site: Trombay (near Bombay).

Japanese-Thailand Pact: Mitsubishi Metal Mining Co. and Mitsubishi Shoji Co. are scheduled to sign a contract soon with Thailand interests as a preliminary to establishment of a joint Japanese-Thai firm to develop Cheang Phra tin mines in Nazan, Thailand. Plans call for capitalization of \$228,000; the mines are expected to produce 48 tons/month of tin ore, which will be sent to Mitsubishi Metal's Ikune refinery for processing.

Exports/Switzerland: Swiss exports of chemicals and pharmaceutical products increased sharply during 1954. Breakdown: exports of pharmaceuticals rose (from 321 million francs in 1953) to a value of 382 million francs; perfumer's products climbed from 32 million to 40 million francs; export of industrial chemicals jumped from 100 million francs to 128 million. Top rise was registered by aniline dyes and indigo—export of which advanced to 296 million francs from 235 million francs in 1953.

Casein Exports/Canada: Canadian casein exports took a big jump toward the end of 1954—to 831,855 lbs. in November from 270,245 lbs. in October. Chief reason: increased exports to the U.K. and the U.S. Total exports for the first 11 months of 1954 amounted to 4.06 million lbs.—361,000 lbs. to Great Britain, and 3.7 million lbs. to the U.S. In the first 11 months of 1953, on the other hand, Canada exported only 2.6 million lbs. of casein abroad—all of it to U.S. buyers.



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- Corpus Christi, Texas



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JUDGE BRIGGLE: For two firms with one tradename, a ruling on priority.

LEGAL.

Name Infringement: Two process firms that had been using the same tradename thrashed out their dispute in federal district court at Springfield, Ill., with the upshot that A. E. Staley Mfg. Co. (Decatur) now has priority in the use of the "Staley" name as a trademark. Judge Charles Briggie signed an injunction preventing Staley Milling Co. (Kansas City, Mo.) from infringing on the trademark and from unfair competition against the Illinois concern. Earlier, Judge Briggie had dismissed counterclaims made by the Missouri firm, which is now banned from using the word Staley except in its corporate title.

Sulfur Suit Settled: An out-of-court settlement has ended the \$1.6-million civil suit filed two years ago by American Sulphur & Refining against Pacific Foundry and Pan Pacific Sulphur (*CW*, March 28, '53, p. 28). It appears that American Sulphur decided to use at its Sulphurdale, Utah, plant a process based on solvent extraction, combining work done by that company with techniques covered by certain Esso patents, instead of the process involved in the litigation. Pacific Foundry, which has taken over rights to the roasting process, is still testing that method.

Ad Claims Disputed: Does the L. H. Kellogg Chemical Co. of South Minneapolis, Minn., have "the finest and



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Properties

Molecular Weight	31.06
Boiling Point at 760mm, °C	- 6.79
Flash Point, Tag Open Cup, °F	34 (30% sol)
Density at 20°C	0.912 (30% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6 (30% sol)

DIMETHYLAMINE $(\text{CH}_3)_2\text{NH}$

Uses

Raw material in manufacture of thiuram sulfide-type vulcanization accelerators and of dimethyldithiocarbamic acid salts used as fungicides. Neutralizing and solubilizing agent in preparation of concentrated solutions of 2,4-D salts. Manufacture of anti-malarials.

Properties

Molecular Weight	45.08
Boiling Point at 760mm, °C	6.88
Flash Point, Tag Open Cup, °F	54 (25% sol)
Density at 20°C	0.921 (25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.7 (25% sol)

TRIMETHYLAMINE $(\text{CH}_3)_3\text{N}$

Uses

Preparation of long-chain quaternary ammonium compounds used as softeners, lubricants and waterproofing agents for textiles. Used with benzoyl peroxide to "set" methacrylate resins. Synthesis of cationic surface-active agents.

Properties

Molecular Weight	59.11
Boiling Point at 760mm, °C	2.87
Flash Point, Tag Open Cup, °F	38 (25% sol)
Density at 20°C	0.913 (25% sol)
Weight per U.S. Gallon at 68°F, lbs.	7.6 (25% sol)



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B & I

most complete laboratories maintained by any manufacturer," as it asserts in advertisements, or is it entirely plantless, as the Federal Trade Commission contends? A hearing has been set for March 22 to determine whether the company—which sells embalming fluid—should tone down this and other ad claims.

Carbon Disulfide Suit: In Baltimore, Federal Judge Roszel Thomsen has ruled that two longshoremen were not disabled and hence could not collect damages for having been overcome by fumes from grain that had been treated with carbon disulfide to prevent weevil infestation. The men were working in the hold of a ship at Galveston, Tex.

Still to Be Heard

The defendants are still to be heard from in the \$5-million lawsuit over the Waksman-Schatz streptomycin patent. Federal Judge Thomas Meaney has extended to March 2 the time for completing the taking of a deposition from antibiotics researcher Selman Waksman by Nathan Reibel, attorney for plaintiff Mary Marcus.

The defendants—Waksman, the Rutgers Research & Endowment Foundation, and Merck & Co.—will then get their first turn at bat in this civil suit filed nearly four months ago in U.S. District Court, Newark, N.J.

Instead of making a written reply to Miss Marcus's charge that she's being deprived of the credit and royalties for discovery of streptomycin, the defendants will ask the court to throw out all the main points in her complaint. Arguments on this move will be heard March 14.

Several counts, according to the defense lawyers, "fail to state claims on which relief can be granted." Other counts, charging patent violation and asking a decree that would invalidate the streptomycin patent, should be struck or dismissed, the lawyers say in their motions, on the ground that "fraud may be prosecuted only by the U.S. government, and not by a private person." They ask that Miss Marcus's request for a jury trial be denied because, they aver, a certain paragraph in the U.S. code means that the plaintiff is not entitled to a jury trial in this kind of case.

Also next month, the defense attorneys plan to take a deposition from Miss Marcus.

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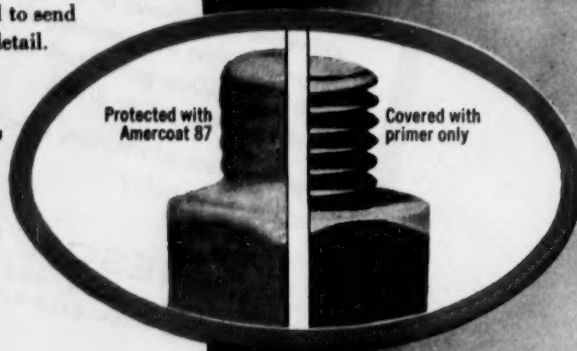
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Compromise on Manpower

Under current law, the chemical industry has little recourse but to submit to the drafting of young scientists and engineers. That is the sad message relayed to leading industrialists, scientists, and educators by Maj. Gen. Lewis B. Hershey, director of selective service.

Speaking at the nation's first convention on the use of technical manpower (in Chicago's Conrad Hilton Hotel), Hershey warned industrialists to make definite recommendations to Congress now if they want the law changed. Otherwise they'll have to accept the inevitable—a growing drain on available supplies of graduate technologists.

Reply to Criticism: Hershey's remarks were framed to answer a number of leading manufacturers (including chemical makers) who had forthrightly criticized draft board policies, the U.S. educational system, and "gross national indifference" re the manpower shortage.

M. H. Trytten, director of the office of scientific personnel for the National Academy of Sciences, stressed a comparison with the Russian attitude toward utilization of trained scientists. Russia, he emphasized, now turns out more than twice as many* chemists, chemical engineers annually as the

U.S. and exempts them from all military service. Moreover, to encourage students to pursue scientific careers, Russia's high-school curricula are weighted heavily in favor of the natural sciences and mathematics. Lack of interest at a grass-roots level, he claims, is the basic reason why U.S. legislators have been lackadaisical about encouraging youngsters to study science.

Lt. Gen. Leslie R. Groves (retired) wartime director of the Manhattan

Project was even more caustic in his attack on the U.S. educational system. He charged that both civilian and military plans are geared to the "mean of conformity" instead of developing leaders via "rigorous discipline."

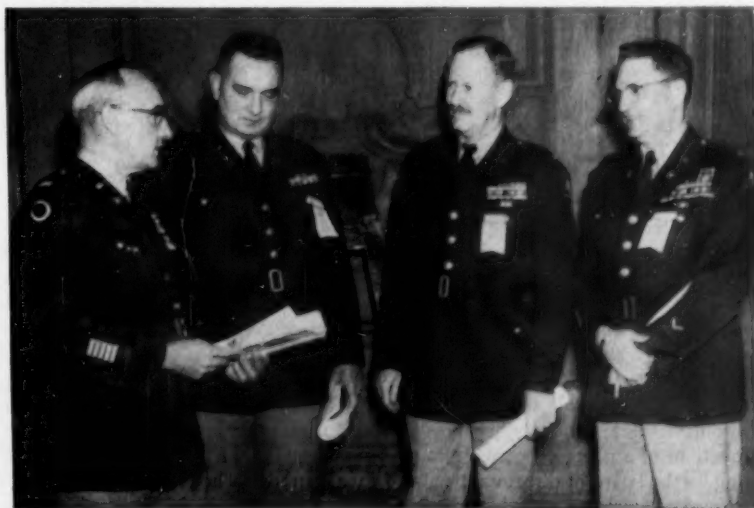
Hershey admitted that this is true but insisted that because Congress has decreed that both the "learned and unlearned" must serve, all the draft machinery does is determine "when."

Walter H. Zinn, director of the Argonne National Laboratory, concerned about the waste of scientific talent, had this suggestion:

If Congress and the public insist on equality of service, why not set up a corps (within the Army), then assign drafted technologists to critical tasks, both military and of an essential defense nature?

Military conferees were not opposed to the suggestion, but warned industry representatives that the time is running short for such an idea to be pressed in Washington. Why: the House of Representatives has voted almost unanimously to extend the present Military Service Act for four years; the bill is now under consideration in the Senate, and probably will be passed.

Industry will probably have to compromise (at best)—since extension is virtually a necessary administrative procedure. But it can still be heard (if it chooses) on possible amendments or regulations concerning use of reserve scientists.



MILITARY SPOKESMEN: Warmed to the idea of a scientific corps.

*Although this question has often been raised: Are many Russian "engineers" technicians, whereas U.S. engineers are technologists?



DIASPARK DIRECTORS double as workers and packagers, make . . .

'Sparkle' and 'Sprinkle' Pay Off

This week, as another Junior Achievement Program in Houston, Tex., rolled into high gear, chemical producers were openly optimistic over their protégés' chances of success.

Diamond Alkali employees were particularly gleeful. Sponsors of Diaspark Co.—the teen-age company that topped last year's honor award—Diamond employees were sure their entry would take top place again this year.

In 1954, Diaspark (staffed by 20 Pasadena, Tex., high-school students) turned out dish- and clothes-washing detergents ("Sparkle" and "Sprinkle") at a rate sufficient to enable it to pay a bonus, declare a 10% stock dividend on its stock, and still have enough cash left to give each of its student members \$10. The outlook for this year is equally bright.

Long-Term Objective: Behind the Houston training program is a non-profit national organization pledged to give teen-age youth a preview of the business world through running miniature establishments of their own.

Each student-operated company is under guidance of three advisors, appointed each year by the management of the sponsoring firm. It operates during the school term (October through June); students perform all functions of a going concern—from sitting on the board of directors to manufacturing, packaging and selling its soap powders.

Company members even sell stock to raise capital to purchase raw materials, pay rent, light, power and taxes out of proceeds. Of the 54 companies formed at the beginning of this year's school term, only one is in serious doubt whether it can declare a stockholders' dividend before June. And if it goes broke, it can float a loan from a teen-agers' bank—the Junior Achievement Bank of Commerce—sponsored by the Houston National Bank of Commerce.

A Serious Matter: Chemical old-timers in Houston are impressed this year—as always—with the seriousness with which high-school students attack advertising, production, and marketing problems. Most companies average 11 members (Diamond's is one of the larger groups), regularly elect officers, and hold meetings to determine company policy.

Then, as a practical matter, they normally adjourn to production duties (*see cut above*).

Aside from the program's public relations value, manufacturers in Houston are sure that their interest in Junior Achievement will pay handsome manpower dividends in the years ahead. Notes one chemical vice-president: "Most of us think such a plan will do more to sell chemistry to youngsters than any other single thing we can do. They learn through experience—for which there is no substitute."

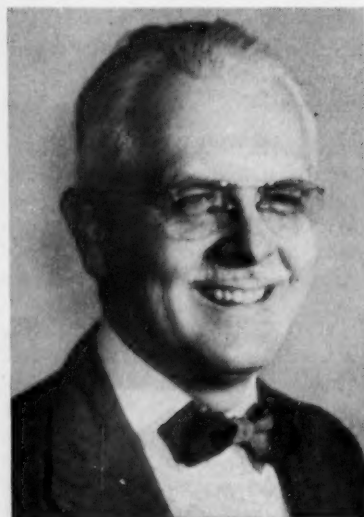
Ten Easy Lessons

Say you're working for a nonchemical company—maybe as purchasing agent, market researcher, or salesman—and you want to know what's going on in chemical industry developments these days. How does an outsider bone up on chemicals?

If he lives in Baltimore, the answer is easy: just sign up for the 10-week course that's been organized by Leo Brandt, market research manager for Davison Chemical Co., division of W. R. Grace & Co.

This course—in which various chemical companies are providing speakers for the weekly lectures—is being presented as part of the winter adult education program for the general public at Baltimore's Jewish Community Center. Other companies are supporting the course by paying the tuition fees for selected employees; and enrolment has been high enough so that the original fee of \$10 per student could be halved.

Speakers and their subjects: Melvin Fuld, of Fuld Bros., president of Chemical Specialties Manufacturers' Assn., "Chemical Specialties and Aerosols"; John Kelly, H. B. Davis Co., "Surface Coatings"; J. B. Armstrong, Bethlehem Steel, "Iron and Steel"; Ralph Carr, Mathieson, "Chlorine and Alkalies"; Richard Hall, McCormick & Co., "Food Chemistry"; Col. Edward Hopkins, Baltimore Bureau of Water Supply, "Industrial Water"; R.



DAVISON'S BRANDT: For business use, a quick course on chemical industry.

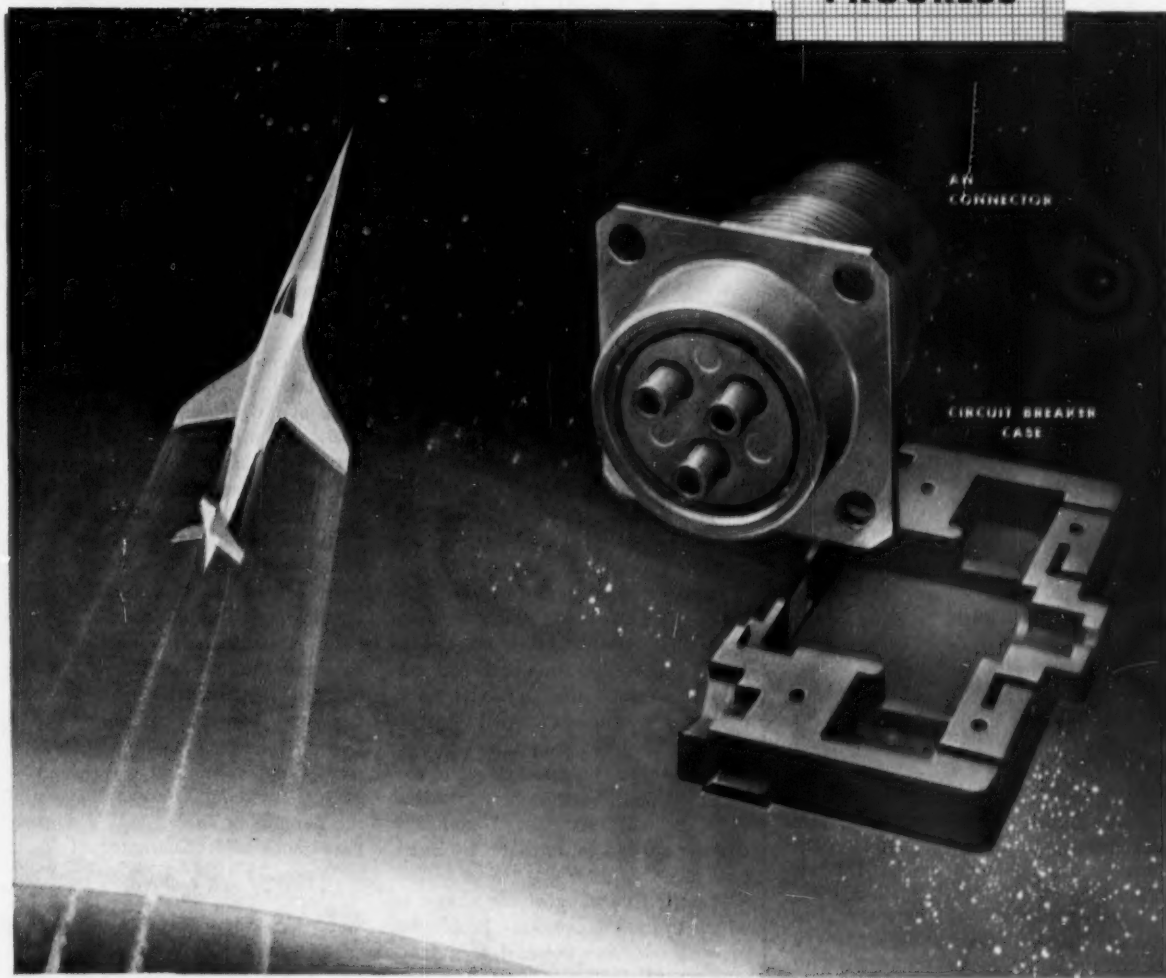
Q. Could chemical research create electrical insulation to keep pace with the ever-increasing demands of hotter-flying jets?

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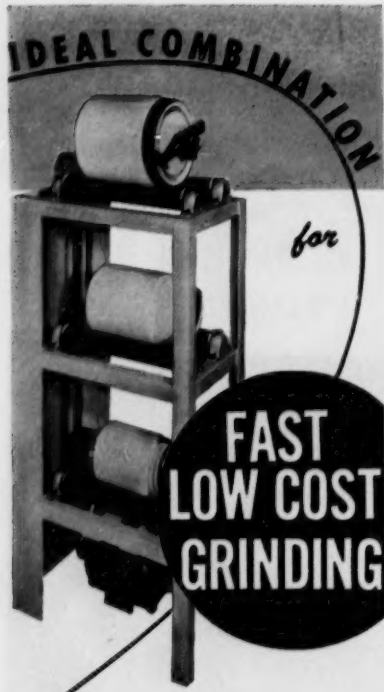
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BUSINESS & INDUSTRY

F. Patrick, Pemco Corp., "Porcelain Enamel"; Alan Beerbower, Esso Standard Oil, "Petroleum Industry"; Vincent Sauchelli, Davison Chemical, "Fertilizer Industry"; and E. A. Currier, Lever Brothers, "Soaps and Detergents."

Most of the speakers are research chemists or directors of research, and will try to explain in nontechnical language what has been accomplished in their respective fields and what problems are being tackled now. The series of Tuesday evening lectures will run through April 12.

LABOR

Overtime at Issue: Whether the company should have the right to require employees to work overtime appears to be a principal issue in the strike being waged by Local 12270, United Mine Workers' District 50, at the Wyandotte Chemical plant (Wyandotte, Mich.). It's understood that wage rates are not in dispute; the company has offered increases ranging from 5¢ to 11¢/hour. By a relatively slim margin, union members voted (977 to 924) to reject the new contract proposed by Wyandotte.

Pickets kept all persons from entering the plant during the first three days of the strike, then agreed to allow supervisory and clerical employees to go in and out. In return, the company promised not to replace any of the strikers with "new hires" while contract negotiations continue. After a bargaining session arranged by a federal mediator, a company spokesman said he foresaw "no quick settlement."

Reported wording of the clause to which the union objects: "Employees to work overtime unless a reasonable excuse can be given and a second employee agrees to work in place of the first."

Shorter Strike: Much briefer was the strike by about 1700 employees of Union Carbide's Bakelite Co. division plant at Bound Brook, N.J. These workers—represented by the Chemical & Crafts Union (Ind.)—staged a work stoppage that lasted less than three days, then accepted a new contract calling for a wage increase of 7¢/hour.

GAW Conference: Chemical companies are likely to be well represented



ARTHUR FELTON, NEW YORK
LABOR CONSULTANT FELTON: On stabilizing employment, a word of advice.

at a special executive conference that will be held March 10-11 in New York and which will be devoted entirely to various aspects of the guaranteed annual wage problem. Sponsor: Society for the Advancement of Management. Among speakers will be Arthur Felton, consultant for Bruce Payne Associates (New York), whose topic will be "Company Planning for Employment Stabilization." Felton holds that such planning can be achieved through specific approaches to production control, inventory control, and analysis of market facts. Other subjects include "Unemployment Compensation and Wage Guarantees," "Facing GAW Demands at the Bargaining Table," and "Company Experience with Guarantee of Work or Wages."

Some Up, Some Level: Among new company-union agreements of chemical interest, one provides for considerably higher wages and the other calls for no change in basic pay rates:

- Wage hikes of 5¢, 6¢ and 7¢/hour—depending on job classification—are in store for employees of Du Pont's Carneys Point Works, Burnside Laboratory, Chambers Works and associated units. Salaried employees who are in the bargaining units will receive comparable increases.

- Some 28,000 employees at 10 widely scattered plants of Goodyear Tire & Rubber will receive "a number of improvements"—according to the United Rubber Workers (CIO)—but

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In other tests in the field, as well as by Weather-Ometer, Fade-Ometer, and 450°F. oven tests, the results were similar: outstanding resistance to embrittlement and discoloration when PARAPLEX G-62 plasticizer-stabilizer was used.

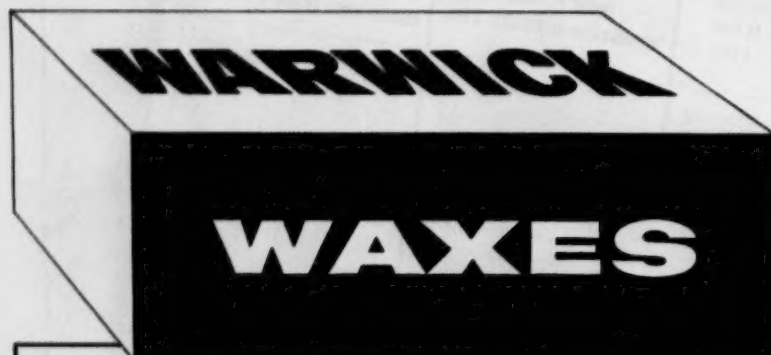
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NAME OF WAX	MELTING POINT ASTM D-127-30	PENETRATION 100G/77°/ 5 SEC.	COLOR H P A	ACID NUMBER	SAPON- IFICA- TION VALUE	TYPE
CARDIS* ONE	195-200	1-2	4-5	12-16	55-65	EMULSIFIABLE PETROLEUM WAX
CARDIS* 314	184-189	4-6	4-5	13-16	45-55	EMULSIFIABLE PETROLEUM WAX
CARDIS* 319	180-185	5-7	4-6	18-20	65-70	EMULSIFIABLE PETROLEUM WAX
CARDIS* 320	180-185	5-7	4-5	28-30	75-80	EMULSIFIABLE PETROLEUM WAX
CARDIS* 262	195-200	3-5	BROWN	14-17	40-45	SPECIALLY PROCESSED PETROLEUM WAX
FORTEX	190-200	3-5	2½-3½	0.0	0.0	MICRO- CRYSTALLINE HARD AND PLASTIC
MEKON* B-20 A-20 Y-20	190-195 190-195 190-195	3-5 3-5 3-5	BROWN-BLACK AMBER-6 MAX. YELLOW-3-3½	0.0	0.0	MICRO- CRYSTALLINE HARD AND BRITTLE
POLYMEKON*	200-MIN.	0-3	YELLOW	0.0	0.0	SPECIALLY PROCESSED PETROLEUM WAX
WARCO WAX 180	180-185 180-185	4-7 4-7	WHITE BROWN	0.0	0.0	MICRO- CRYSTALLINE HARD AND BRITTLE
WARCO WAX 150-A	145-155 145-155	15-20 15-20	YELLOW 1-2 BROWN	0.0	0.0	MICRO- CRYSTALLINE PLASTIC
WARCOSINE	150-155	15-20	WHITE	0.0	0.0	MICRO- CRYSTALLINE PLASTIC
PARAFFIN	136-138 ASTM	FULLY REFINED				CRYSTALLINE
CANE WAX 700	169-174	1.0-1.5	BROWN	25-30	70-90	VEGETABLE WAX
CANE WAX 500	171-176	3 MAX.	LIGHT BROWN	25-35	55-70	VEGETABLE WAX
CANE WAX 517	165-170	1 MAX.	BROWN	20-30	65-75	VEGETABLE WAX

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B & I

no general wage boost. The two-year pact continues union shop agreements where permitted by state law.

Not to be 'Dragged': Management at General Electric reports that certain union officials have been angered at GE's refusal to bargain in the old method that gave union leaders a free "buildup." Under that outmoded method, a company would start out by making an offer it knew was too low, then agree to a more generous compromise. This, GE says, could be used by a union negotiator to make it appear that he had "dragged" the company to a position more acceptable to the union. Now, GE tries to make its original offer "close to what's obviously right."

KEY CHANGES . . .

Dwight P. Joyce, to board chairman, The Glidden Co., Cleveland.

E. W. Volkmann, to manager, Research Dept., Koppers Co., Inc., Pittsburgh.

Frederic E. Crist, to secretary, Sun Chemical Corp., Long Island City, N.Y.

Charles T. Silloway, to president, Zonite Products Corp., New Brunswick, N.J.

J. Kenneth Craver, to director, Commercial Chemical Development, General Mills Research Laboratories, Minneapolis.

Henry C. Zeni, to sales manager, Arizona Chemical Co., New York.

John K. Boykin, to resident manager, Charlotte, N. C. works, and **T. M. Ferguson**, to resident manager, Atlanta, Ga. plant, National Aniline Division, Allied Chemical & Dye Corp., New York.

Charles B. Pyle, to director, sales and marketing, Sharp & Dohme Division, Merck & Co., Inc., Rahway, N.J.

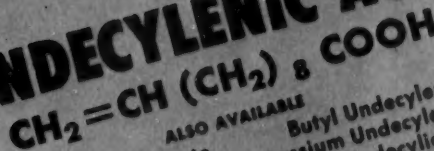
Robert H. Kampschulte, to general sales manager, Chemical Division, Celanese Corp. of America, New York.

KUDOS

To **Carl S. Marvel**, research professor of organic chemistry, University of Illinois, the 1955 Gold Medal of the American Institute of Chemists.

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NECESSITY OF CHECK WEIGHING

INSTANTANEOUS CHANGE FROM
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ADJUSTABLE TUBULAR LEGS

CUSTOMER'S SUPPLY HOPPER

HOPPER VIBRATOR SUPPLIED WITH MACHINE

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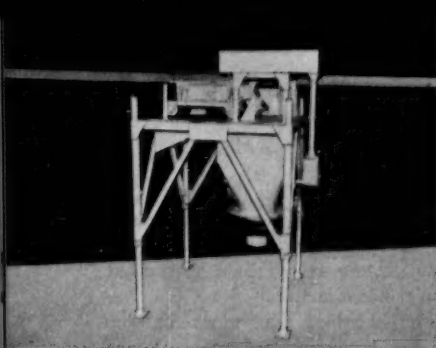
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Specifications can save equipment dollars if they're flexible enough to afford the vendor freedom to design the best tool for the job. Here's what the vendors suggest you do to get the most out of your specifications:

- Stipulate the job you want done, not how the machine should be built.
- Give complete information about the product and process operation.
- Don't make specs so tight they fit only one piece of equipment—another manufacturer may have something better to offer.
- Don't rule out an improved process or engineered package just because it's unfamiliar.
- Avoid the extravagances of "gold plating," overdesign, unnecessarily close tolerances.
- Consult manufacturers' representatives for advice on special requirements.
- Keep an open mind, even after specs are drawn up.

Looser Specs, Lower Costs

To most people the term "specification" denotes a detailed draft of particulars requiring rigid conformity. But to permit selection of the best tool for a given job at the lowest cost, equipment specifications must be flexible enough to take advantage of cost-saving alternates. That's the consensus of CHESEA (Chemical Equipment Sales Engineers Assn.) members and other leading equipment builders queried by CW last week.

As they see it, the primary function of an equipment specification is to stipulate the job that is to be done. It should be rigid in its definition of process requirements and available facilities, without imposing unnecessary restrictions on the vendor. If the manufacturer has a complete understanding of your problem and freedom to work out the best mechanical design, chances are he can save you equipment dollars.

In specifying process conditions, no details should be omitted. The equipment manufacturer needs to know performance requirements, product characteristics, and how his machine fits into the process. A good way to make sure that you tell the whole story is to use the special checklist that the vendor provides for preliminary inquiries.

Machine Design: Detailing equipment to the n^{th} degree is a job for the vendors' engineers not the specifications writer. Too often, say the manufacturers, process engineers include details that call for unnecessary fabrication costs. As one vendor put it, such planning "only muddies the water, wastes their time and ours."

The equipment designers are usually in a better position to spot cost-saving short cuts than are the process engineers meeting a new problem for the first time. A leading insulation manufacturer, for example, wisely left plenty of flexibility in a specification for a slurry-to-slurry heat exchanger with which he was unfamiliar. As a result, heat exchanger specialists, drawing on their experience with similar installations, came up with an adequate design that saved the customer both time and money.

Though mechanical details are the vendor's responsibility, your preliminary specs should not require him to furnish more than are needed to make the equipment selection. Too many details raise the cost of preparing specifications, clutter up comparative evaluations. But if they have important bearing on other items of the overall process design, consult the vendor's field representative for suggestions.

Unlimited Choice: To best utilize the engineering ability and experience the equipment builders have to offer, view all proposals with an open mind. Don't indiscriminately limit your selection—the best equipment for your job may be among those you rule out.

One of the most shortsighted practices of specification writers, claim the vendors, is drawing specs so tight that only one piece of equipment will fit them. Though any manufacturer enjoys the competitive advantage of having his own equipment specified, they all agree that such practice is not in the customer's best interest.

For example, a filter manufacturer cited a recent case in which he quoted on a filter specified to fit a competitor's standard design. His price was \$5000 more than he would have asked for one of his own standard units that could have handled the job just as well. The customer might have selected the competitor's filter in any event, but by making the specs inflexible, he passed up the opportunity to compare possible cost advantages of other designs.

Omit Extravagance: When specifying any type of equipment, don't ask for higher quality than you need. Tolerance is costly—use it sparingly, intelligently. Special surface finish is often a necessity for food or pharmaceutical machinery. But "gold plating" is an extravagance in chemical equipment for which mill finish is just as good.

And even where it's required, special finish can be overdone. One pharmaceutical manufacturer learned too late that the No. 7 (mirror) finish he had paid for was gone after processing only one batch. Fine scratches made by a wooden paddle reduced the mirror surface to a No. 4 finish, which would have been adequate and cheaper to begin with.

Though "gold plating" and overdesign are usually the result of too-cautious planning, they can also arise from misapplication of qualifying clauses. Specification writers sometimes stick in a businesslike phrase without considering how it may change the over-all meaning.

The Hardinge Co. once encountered an extreme case of misapplied qualification in specs for a large ball mill, which, among other things, was re-



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PRODUCTION

quired to be "in static and dynamic balance." When the customer discovered that a well-meaning engineer had "lifted" the impressive phrase from a turbine rotor specification, the impossible restriction was deleted.

Detail Exception: The one class of equipment that takes exception to the rule for avoiding mechanical detail is pressure vessels. The wide variety of services for which pressure vessels are required makes standardization difficult. And many vessel builders are merely metal fabricators without the engineering know-how to design process units. So it is essential that the process engineer be as explicit as possible in setting down vessel requirements.

A large Midwestern vessel builder expressed the opinion that buyers of process equipment can make cost savings in direct ratio to the inflexibility of their specs. With only process specs to work from, the fabricator has no way of knowing what the customer really wants. As a result, some bids are prepared on a cost basis, others from the standpoint of quality. And without specific details to guide his decision, the buyer may be influenced by price to choose a vessel ill-suited to his needs.

Engineered Savings: Since vessel

fabricators have less freedom of design than other equipment builders, cost savings must be considered by the process designer. Most vessel construction practices are confined within certain limits by various standard codes. To avoid excessively high requirements, the designer must take full advantage of whatever latitude the applicable code provides.

For example, the code permits a vessel designed for 150 F, 710 psi. to be equipped with 300 psi. flanges. But if the designer rounds off the 710-psi. design pressure (operating pressure plus safety factor) to 750 for convenience, the code would dictate the use of heavier flanges.

Metal thickness is another feature that's closely controlled by the code. But even in this respect, the designer can apply his knowledge of optional structural methods that minimize strength requirements. Blind flanged heads, for example, appear to be easier to fabricate than semielliptical heads. But in the final analysis, the deceptively simple, flat construction can cost three times as much as the rounded closure.

Construction Material: The success of vessel design is largely dependent on the selection of the best, though not necessarily the cheapest, material

Federal Power: Business Better

For large segments of the chemical industry located in the Northwest and Southeast, federal power is a dilemma. In principle, most chemical men are against it; in fact, many are dependent upon it—and becoming more so. Last year both TVA (*CW*, Feb. 19, p. 56), and Bonneville sold more power—respectively, 268 million kwhr. and 1573 million kwhr. more—to chemical customers than in 1953.

From BPA's annual report (to be released shortly), here is a breakdown on sales to chemical and allied companies:

	1953 (millions kwhr)	1954 (millions kwhr)
Victor Chemical Works	160.5	313.6
Rayonier Corp.	19.7	22.6
Pennsylvania Salt Mfg. Co.	120.0	156.4
Keokuk Electrometals	76.4	76.1
Pacific Carbide & Alloys Co.	30.3	33.8
General Services Administration (magnesium plant run by Pacific Northwest Alloys)	207.3	100.1
Electrometallurgical Co., Div. UCC	124.9	151.5
Crown-Zellerbach	90.2	104.8
Carborundum Co.	79.7	108.0
Aluminum Co. of America	1,559.7	1,980.1
Kaiser Aluminum & Chemical Corp.	3,015.3	3,678.3
Reynolds Metals Co.	1,971.9	2,203.8

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your industry. You'll see that many functions require surprisingly small quantities of CAB-O-SIL to keep improvement costs down. Commercial quantities are continuously available.

Chemical and Physical Properties

Silica Content (Moisture-Free Basis)	99.0—99.7%
Free Moisture (105° C.)	0.2—2.0%
Ignition Loss (1000° C.)	0.2—1.0%
CaO, MgO	0.00%
Fe ₂ O ₃	0.004%
Particle Size Range	.015—.020 micron
Surface Area (Nitrogen Adsorption)	175—200 m. ² /gm.
Specific Gravity	2.1
Color	white
Refractive Index	1.55
pH (10% Aqueous Dispersion)	4.5—6.0
Oil Absorption (Gardner Method)	150 lbs. oil/100 lbs. pigment
Bulking Value	0.057 gal./lb.
Apparent Bulk Density	
Uncompressed Grade	2.5—3.5 lbs./cu. ft.
Compressed Grade	6.0—6.5 lbs./cu. ft.

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PRODUCTION

of construction. Where corrosive attack is negligible, the choice of materials is based primarily on cost. In such a case, stainless steel may very well be cheaper than carbon steel, which requires $\frac{3}{8}$ -in. corrosion allowance even in service with water.

Where corrosion attack is great, material selection is based on the relative corrosion resistance of the various alloys. But cost is important, too, especially if frequent replacement is anticipated. Foster Wheeler, for example, found that rapid corrosion in an MEA absorber attacked stainless so badly that replacement would be required about every 12 months. The final decision was to use carbon steel, which lasted only six months, but which was cheaper in the long run

from the standpoint of replacement costs.

Of the many special vessel extras (baffles, trays, supports, etc.), gasketing is perhaps the most important. Careful consideration of gasket design can minimize the vessel's code rating. And from the standpoint of operating costs, gaskets are the proverbial ounce of prevention. Process shutdowns for repair or replacement cost far more than can be saved by skimping on gasket design.

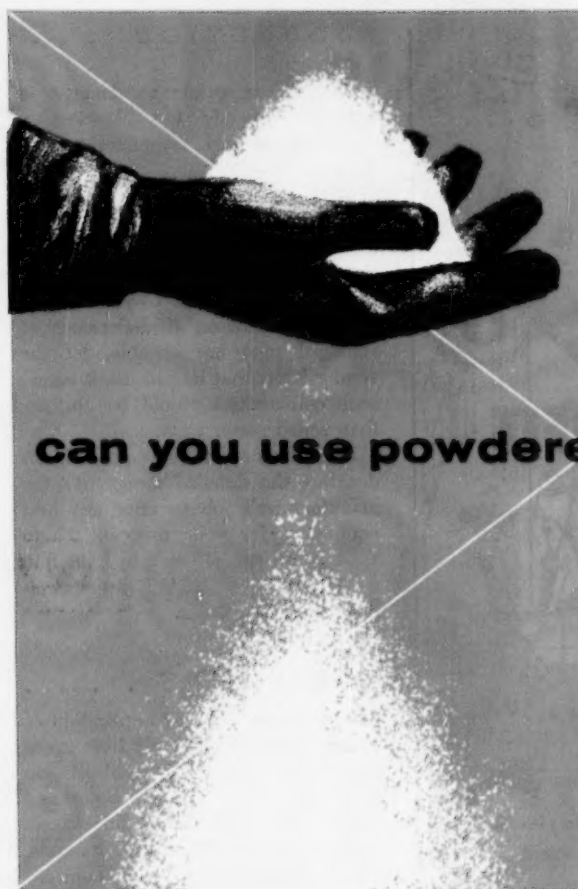
Stress relief, material certification, and X-ray inspection requirements are usually determined by the code. But don't neglect to specify special tests or handling procedures that may be needed to guard against failure of the vessel you're buying. If odd design



Spray Strainer Stops Pollutants

THIS OVERSIZE wire-mesh pad (above) could be one of the answers to the long quest for inexpensive pollution controllers. Already used with success in entrainment separation, the units are now testing their worth (about \$345 each) in containing toxic dispersions such as finely divided caustic spray and wettable parathion dust. The Yorkmesh Demister, made

from knitted stainless steel wire and measuring 4 ft. across and 6 in. deep, is being used in a tower scrubber where caustic is employed by a big chemical firm to scrub organic material from steam. The pad, claims manufacturer Otto H. York Co., Inc. (W. Orange, N.J.), eliminates all earlier evidence of escaping caustic at tower top even at full sparge.



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- FINELY DIVIDED METALS AND CATALYSTS**
- YOUR PROCESS**

Atomic layers of metallic sodium can be coated on the surface of finely divided solids such as salt, soda ash, carbon, alumina, metal oxides and sand. The coated solids are free-flowing, can be used in fixed beds or fluidized systems, or can be suspended in hydrocarbons. The amount of sodium present depends on the particle size of the carrier, e.g., carbon black carries over 35%.

The tremendous surface-to-weight ratio of sodium provides complete and rapid reaction at temperatures above and below sodium's melting point. This easily-handled, easily-controlled form may be your answer to problems such as:

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2.—Purification of gases, hydrocarbons and ethers.

3.—Preparation of NaH and NaNH₂ for in situ use.

4.—Catalyst for hydrocarbon cracking, polymerization and rearrangement reactions.

Although sodium coated solids can be handled safely in air, they should be prepared and used in closed systems to obtain high yields. High surface area is the key to the efficiency of sodium in this form. Hence, the title for our booklet "High Surface Sodium". **A copy is yours for the asking.**

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PRODUCTION

makes it susceptible to damage in shipment, specify the blocking or strapping needed to minimize that danger.

With so many restrictions to comply with, the vessel fabricator has little freedom to take cost-saving short cuts. But don't overlook any possible flexibility that he can use to your advantage. For instance, if dimensions of standard pipe are suitable, let the vendor know that he can use it where such construction would be cheaper than rolled plate.

Regardless of who is responsible for deciding the detailed design, it's the manufacturer's job to offer the best equipment for your process. It's to your advantage if you can help him do it. When the choice is yours, flexibility is in your favor.

EQUIPMENT

Sound Emulsifier: One application of ultrasonics that apparently lives up to its advance billing is emulsification (CW, Feb. 12, p. 52). The processing industry provided the sound makers with one of their first proving grounds, this week is about ready to take another ultrasonic emulsifier over the hurdles.

Tradenamed Rapisonic Homogenizer, the unit is manufactured by Ultrasonics Ltd. (Otley, Yorkshire, England), is exclusively sold and serviced in the U.S. by J. H. Day Co., Inc. (Cincinnati). Compact and portable, the device is said to have a high output-to-horsepower ratio, to be capable of homogenizing 300-420 gal./hour and of dispersing emulsions into particle sizes down to one micron, using less emulsificant (in some cases, none at all) than conventional methods.

In operation, the unit is clamped on the side of the reaction vessel, its stainless steel intake and output lines sliding at an angle into the mixture. A 2-hp. motor-driven gear pump sucks the fluid up the intake line, delivers it at 150-250 psi. to the nozzle in the bulbed end of the output line where actual homogenization takes place. The bulbed end is a specially shaped resonant bell that concentrates waves from a small vibrating (about 22,000 cps.) blade opposite the nozzle. As the fluid leaves the nozzle at approximately 30,000 psi., it strikes the blade,

Allis-Chalmers is the *one* company that can supply the chemical industry with integrated heavy processing machinery coordinated with required electrical equipment . . . machinery and equipment designed to work together, backed by undivided responsibility.

1

IN A SERIES



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HEAVY

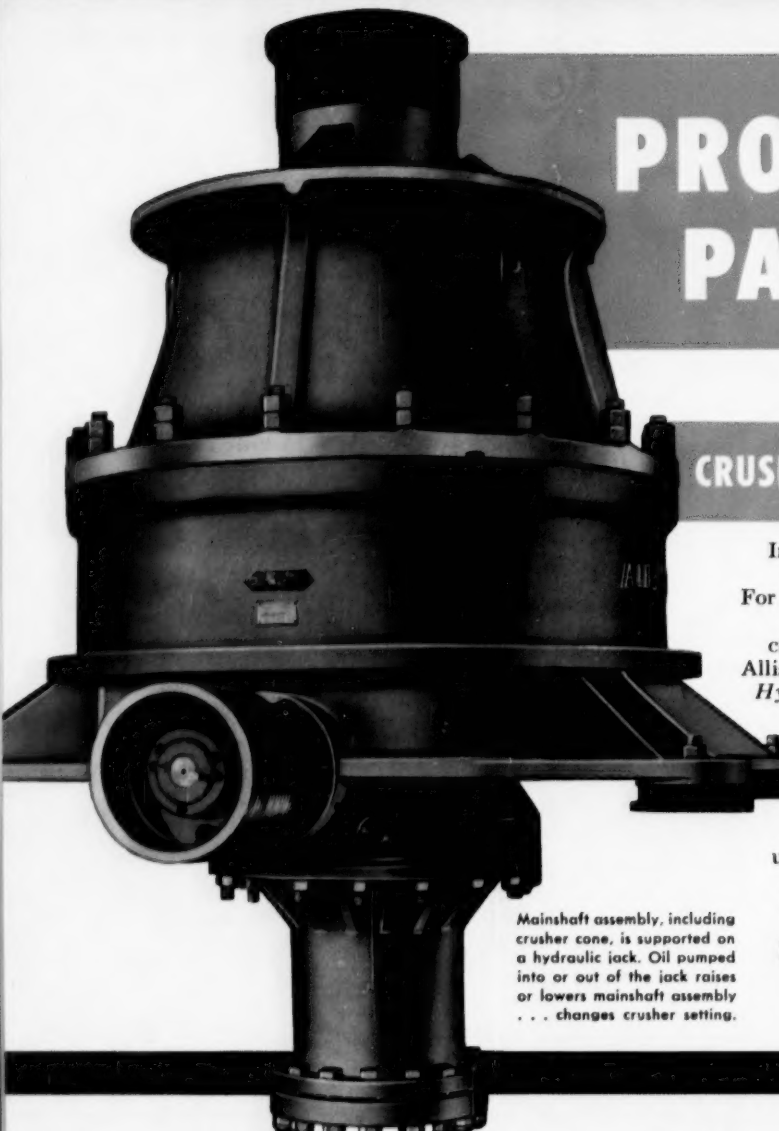
PROCESSING EQUIPMENT

FOR THE CHEMICAL INDUSTRY



PROCESSING PARTNERS ... INT

CRUSHERS




In the broad line of Allis-Chalmers crushers there is a type and size for every application. For volume primary crushing there is the newly designed, high capacity *Superior* gyratory crusher. For secondary and tertiary crushing, Allis-Chalmers builds the hydraulically adjusted *Hydrocone* gyratory crusher. Four types of jaw crushers, a series of roll crushers and the *Pulverator*, a multi-impact hammer mill, round out the complete line.

In the *Hydrocone* crusher (illustrated), hydraulic control makes possible quick, accurate size adjustment and fast emergency unloading *without stopping* the crusher. This is accomplished by hand crank in the small machines. In larger crushers adjustment is a one-man, one-minute pushbutton operation. Hydraulic control also provides compensation for wear and automatic protection against tramp iron and other uncrushable materials.

Mainshaft assembly, including crusher cone, is supported on a hydraulic jack. Oil pumped into or out of the jack raises or lowers mainshaft assembly . . . changes crusher setting.

MILLS



Whether your process calls for individual mills or a grouped

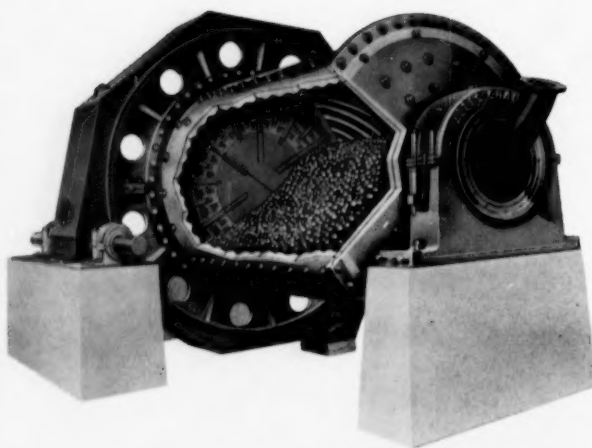
stage-grinding series, Allis-Chalmers can make a right-for-the-job recommendation from a broad mill line.

Rod Mills — for coarse (4 to 20 mesh) grinding, wet or dry.

Ball Mills — for wet or dry 20 to 200 mesh grinding.

Ballpeb and *Compeb* Mills for fine grinds; stage grinding in multi-compartment types.

Illustrated is the Allis-Chalmers ball mill available in 3 to 12½-ft diameters. This type mill has been proved particularly efficient and economical in grinding less abrasive materials formerly ground in fixed path mills.

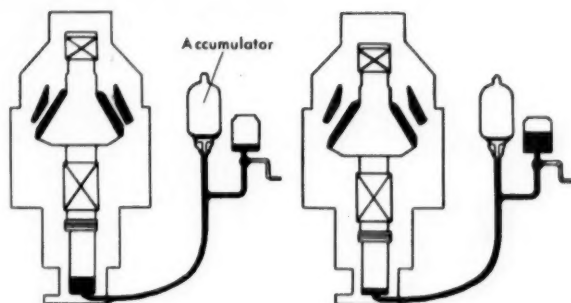


Superior, Hydrocone, Pulverator, Ballpeb, Compeb, Utah, Ripl-Flo, Low-Head, Aero-Vibe, Sta-Kleen, and Thermo-Deck are Allis-Chalmers trademarks.

ALLIS

GRATED EQUIPMENT

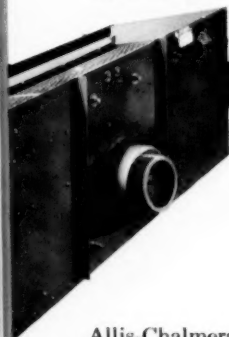
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Backed by Undivided Responsibility



Fine setting—Crushing cone assembly is raised by pumping oil into hydraulic jack.

Coarse setting—Crushing cone assembly is lowered by removing oil from jack.

Tramp iron protection—Bladder within accumulator is nitrogen-inflated to a pressure greater than average crushing pressure. When tramp iron enters crushing chamber, jack oil pressure becomes greater than accumulator gas pressure. This forces oil out of jack—lowers cone to release foreign material.



The Ripl-Flo screen illustrated is built in single, double and triple decks. Sizes 3 by 6 to 6 by 16 feet. Special application screens available with 2½, 3½, 4, 4½ and 5 decks.

SCREENS

Allis-Chalmers vibrating screens include:

Utah Electric Screen—Handles a wide range of granular materials, 10 to 48 mesh (dry), 65 mesh (wet).

Ripl-Flo Screen—for standard, heavy and extra heavy duty sizing, wet or dry. Mesh range: 35 mesh to 8-inch square; 20-inch maximum feed. Available with *Sta-Kleen* deck (rubber balls below cloth), and *Thermo-Deck* heating unit.

Low-Head Screen—for wet or dry screening, rinsing or dewatering. Mesh range: dry sizing ¼ inch to 2½ inches; wet sizing, 35 mesh to 2½ inches; 5-inch maximum feed. Available with *Sta-Kleen* deck for fine sizing.

Aero-Vibe Screen—for medium to fine sizing of lump or granular material. Feed sizes up to 3 inches, separations from 28 mesh to 1½ inches square. Available with *Sta-Kleen* deck or *Thermo-Deck* heating unit.

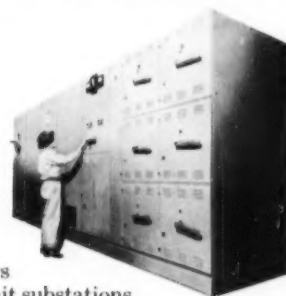
CHALMERS



ELECTRICAL EQUIPMENT

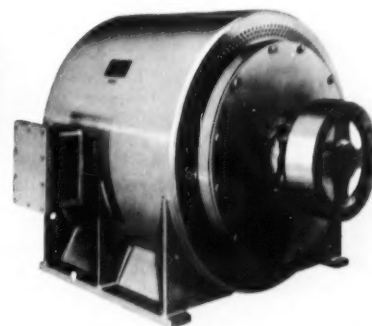
Matched for Maximum Efficiency

UNIT SUBSTATIONS



Allis-Chalmers load center unit substations step down voltages . . . distribute power . . . protect circuits, equipment and personnel. Completely factory assembled, transformer, switchgear and control combinations are integrated in one attractive, easy-to-install enclosure. Compact and flexible, these units can be strategically located to bring high voltages near load centers, with resultant economy in cable cost, minimum line loss and efficient voltage regulation.

MOTORS



The tube-type, totally-enclosed fan-cooled motor is particularly adaptable for chemical plant service. Heat exchanger tubes, stator end plates and external fan can be made of metals resistant to acids or alkalis. With mechanical modification, this motor can also be made explosion-proof. Available in cage, wound-rotor and synchronous types. Ratings range from 40 to several thousand horsepower. Other motors available from ½ horsepower up.

CONTROL



Built into every Allis-Chalmers starter is the type and degree of protection dictated by the application. Illustrated is the Type H starter for controlling power in 2300-5000 volt systems. In this starter are all the coordinated devices and design modifications necessary for high interrupting capacity and complete protection for man, motor and machine.

COOPERATIVE ENGINEERING

Your A-C representative is an application specialist — ready and able to work with your staff or your consulting engineers to solve your processing problems. His recommendations are backed by Allis-Chalmers engineering departments . . . by complete research, testing and pilot plant facilities . . . by experience gained in solving thousands of equipment coordination problems. Each processing problem is given personal, expert attention. Engineers and technicians examine and evaluate your process to make *existing* as well as *new* equipment as productive and economical as possible.

UNBIASED RECOMMENDATIONS

Because A-C builds many types and sizes in a given equipment line, recommendations are completely unbiased . . . dictated only by your specific needs.

Most important is the fact that Allis-Chalmers interest in your problem is continuous. Laboratory services, periodic equipment check-up, emergency parts service are yours for the life of the equipment.



ALLIS-CHALMERS

builds the following types of integrated equipment:

HEAVY

1

Crushers • Grinding Mills • Screens

LIGHT

2

Compacting Mills • Roller Mills • Screens

PYRO-PROCESSING

3

Furnaces • Kilns • Coolers • Dryers

POWER

4

Generators • Condensers • Pumps • Transformers • Switchgear
Substations • Motors • V-Belt Drive • Control

LIQUID HANDLING

5

A complete line of Centrifugal Pumps

AIR AND GAS HANDLING

6

Centrifugal Blowers • Axial Compressors • Rotary Compressors

Allis-Chalmers also makes equipment for solvent extraction, electronic heating, metal detection, and inter-floor conveying.

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☐ 25C6177, "A-C Equipment for the Process Industries."

☐ I would also like bulletins on _____

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A-4549

WRITE FOR LITERATURE

A 28-page insert, "Allis-Chalmers Equipment for the Process Industries," may be found in the Chemical Engineering Catalog. This insert is available in bulletin form (25C6177). Individual bulletins covering specific equipment lines also are yours for the asking.

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Title Company

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City Zone State

PRODUCTION

and in effect, is broken up into a finely dispersed homogenized emulsion as a result of continuous cavitation and violent molecular acceleration produced by the high-frequency vibration.

Molecular Filter: Selective filtration took another step forward (CW, Nov. 20, '54, p. 64) last fortnight with the introduction of a new molecular filter by The Emil Greiner Co. (New York). Openings in the filter approach atomic dimensions, separate one molecule from another on the basis of size.

Back to School: To keep them abreast of current developments, teach them a few new tricks and dust off some old ones they may have forgotten, production men are being offered a variety of postgraduate programs over the next few months:

- Automatic control is the subject of two intensive courses being held by the University of Michigan College of Engineering at Ann Arbor. The first course is scheduled June 13-18; the second, June 20-22. Registration ends April 15.

- Handling and Control of Industrial Solvents will be stressed at the third annual Symposium on Human Maintenance in Industry, to be conducted by Case Institute of Technology, March 16-18 at Cleveland. Registration will be limited to the first 75 applicants.

- Chemical separation techniques will be the theme of 10 lectures sponsored by the New York Section of the American Chemical Society. A different authority in the field will be presented each Wednesday night through April 27.

Process Indicator: In hopes of capitalizing on lower maintenance and replacement time for the process man, General Electric (Schenectady, N.Y.) has designed its new type of HJ precision indicator around a permanent magnet in place of dry cells, standard cells, and slide wires. Also, says the company, continuous standardization against a permanent magnet will reduce manual operations and help assure long-lasting sensitivity. Available as a dc. potentiometer or as an ac. bridge, the instrument scans variables by use of a manual switching arrangement, can measure up to 48 different circuits.

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"If you don't claim your deductions," warns tax expert Sydney Prerau, "nobody is going to give them to you." He's talking to the technical management man and his message is simple:

Don't Overpay Your Tax

If you are like many taxpayers in your income bracket, you will—after some uncertain paperwork—take the standard 10% deduction on your personal income tax. That's the easy thing to do. But it's often unwise in the case of research directors, plant managers and kindred technical management men in the \$10,000-plus/year class who stand to gain much from an assured approach to tax filing.

Knowledge, upon which that assurance must of necessity be based, can save money that otherwise would only go into the federal coffers as income tax overpayments. For some orientation on the special subject of the technical executive's tax return, CW this week called on Sydney Prerau, director of the J. K. Lasser Tax Institute (New York).

"If you don't claim your deductions," emphasizes Prerau, "nobody is going to give them to you." The problem is to determine the allowability of many likely looking items, where the law does not clearly say "yes" or "no." For chemists and engineers, the

tax terrain is quilted with these gray areas.

This year, moreover, the situation is complicated by a new tax law that differs from its predecessor in the handling of income during illness, occupational relocation costs and several other items (*see box, p. 54*).

Unless a research or production man is absolutely sure that the standard 10% (\$1000 maximum) deduction is his only course, he would be wise to consider the following points before filing his tax return. Even if you now plan to settle for the standard deduction, check the following—it may show you how to boost your deductible expenses over \$1000 and put you in a more favorable tax position. If you have already filed your return and now find you have additional deductions, you have three years to amend the original.

Publications, Equipment

Money spent for books, magazines, journals, instruments and professional

equipment are, under certain conditions, deductible as business expenses. The test, Prerau advises, reduces to: Is it an ordinary and necessary expense in earning your income?

The *Textile Research Journal*, for example, would be a deductible item for a fiber researcher. But the cost of a book on how to be a better leader would probably be turned down on the grounds that it was for self-improvement (and not really necessary to earning a living). Seemingly borderline cases—e.g., financial papers and general business magazines—are often allowed if they can be definitely related to job needs.

Pretty much the same situation obtains for equipment (slide rule, etc.), the cost of which must be depreciated over a period of years if the useful life of the equipment is longer than one year.

Societies, Associations

Generally speaking, a group must qualify as a professional organization for membership costs, etc., to come under the heading of valid business deductions. There's little question of what constitutes a professional society. But a difference of opinion is possible between taxpayer and tax-collector on the status of clubs such as the Chemists' Club, a university club, or an athletic club.

Here again, Prerau points out, the key question is whether membership is a necessary expense of the taxpayer in earning his livelihood. This consideration would, of course, be lifted from the shoulders of the individual taxpayer if his employer can be induced to pay such costs. (Then it's a nontaxable fringe benefit.) Tip: eligible membership fees, paid in advance for a number of years, may be deducted in one lump sum.

Private Instruction

Here, too, necessity is the chief criterion of a deductible expense. Unless you can show that a night course in economics, for example, is necessary to keep your job (and not primarily a means of general self-improvement), you would be safer not to claim tuition fees and related expenses.

The cost of a remedial speech correction course, for instance, would be a valid deduction in the event that

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The paint that didn't spill for the young lady represents a remarkable new development in the nation's paint industry. It's manufactured from "Burnok," a new thixotropic alkyd developed by the T. F. Washburn Company, Chicago, Ill.

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Today, this revolutionary vehicle is being used in all types of oil base paints—flats, semi-gloss and high gloss enamels. The development of Burnok by the T. F. Washburn Company is recognized as one of the most significant contributions to the paint industry in recent years.

In the production of Burnok vehicles, Washburn regularly employs Pittsburgh Phthalic Anhydride because of its uniform high quality.

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What you should know about the new tax law before filing or amending your return.

- 1 **Illness**—Under the new law, salary earnings up to \$100/week paid during an illness of more than one week can be excluded from the year's income.
- 2 **Shelter**—Recipients of employer-supplied lodging need not now declare the cost of same as taxable income—if the arrangement is strictly for the employer's convenience.
- 3 **Relocation**—The employer-paid cost of moving regular employees from one permanent position to another is no longer considered income to the transferees. But new employees must report receipt of reimbursement for moving costs.
- 4 **Patents**—Inventors who sell patents may now claim capital gains benefits while retaining a security interest in the patent (i.e., the right to reassume control if exploitation does not satisfy the seller).

keeping your job was contingent upon overcoming some speech defect. But instruction in public speaking and rapid reading might be justified by an executive whose job depended on proficiency in these areas.

"It's risky," cautions Prerau, "to leap to flat conclusions in this area. The tax records are sprinkled with seeming exceptions to the rules."

✓ **Phone, Telegraph**

Unless your salary is mutually understood to cover these expenses, the cost of phone calls, wires, etc., made from home cannot be claimed.

If you do plan to bid for such deductions, it's a good idea to save phone receipts, keep an itemized diary of costs. But even the best documentation may not prevent the disallowing of your claim. The reasoning: the costs involved are rightfully your employer's.

✓ **Gifts**

Unless you are an employer, gifts tendered in the course of business are not deductions. More particularly, a plant manager would stand little chance of gaining a deduction for the cost of gifts to his staff or business acquaintances in chemical and equipment companies. In a recent test case, Prerau explains, a foreman who purchased Christmas gifts for his crew was not permitted to deduct the cost.

Gifts received, however, is another

story. In general, all cash gifts from employers must be treated as income and duly noted. Bonuses, moreover, are considered as income in the year received (or made available) and cannot be treated as capital gains, even though they may have been intended to cover service over a number of years. Profit from sale of stock bought under qualified company option plans, however, may be treated as a capital gain.

Fringe benefits, (company-paid life insurance, accident insurance, retirement plans, courtesy discounts, etc.) are not taxable, are—according to Prerau—a good tax deal, especially for the management man. Reason: he gets the benefit of the services, pays no tax on income that would be needed to purchase them personally; put another way, the value of such benefits, if passed along to the employee as income, would be taxable.

✓ **Entertaining**

The legal deductibility of entertainment expenses, like most other items, hinges entirely on whether they are necessary to earning the taxpayer's income. "Doctors, lawyers, salesmen," counsels Prerau, "usually find it easier to justify such personal expenses than do research directors or plant chiefs." Whenever possible, it's safer for such salaried people to charge business-connected entertainment expenses to their employers. This holds, he points out, even when your entertaining is

done at home and regardless of whether your guests are members of your company, or other firms. It's usually difficult to prove that an unreimbursed expense is necessary where company policy normally provides either advance payment or reimbursement. The internal revenue collector can argue: if your employer didn't consider the item to be a business expense, why should I?

And you are letting yourself in for trouble if you lump entertaining costs at your club under a broad "club expenses" heading, even if membership in that club is necessary to your livelihood. In a showdown, each item of entertaining expense (and that includes guests' meals) would have to be proved by appropriate records (diary, meal tabs, etc.). The government has even, on occasion, demanded corroborating testimony from entertainees.

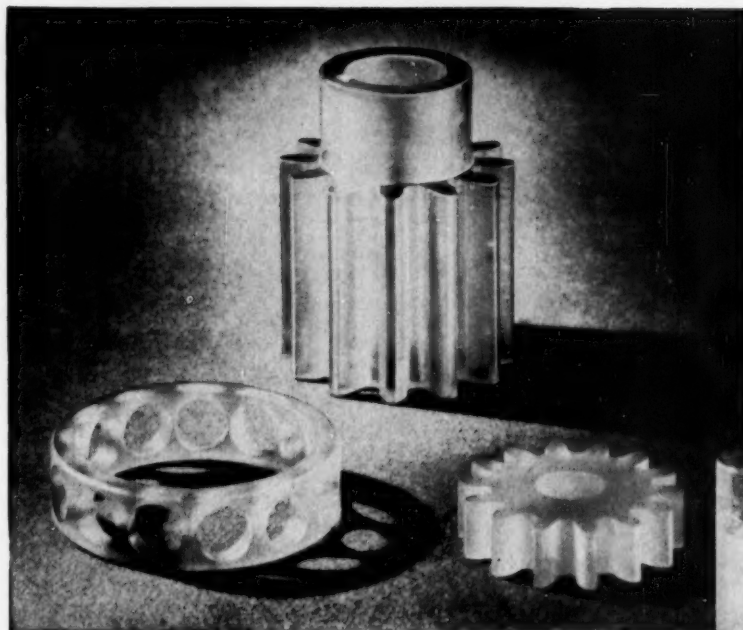
✓ **Working at Home**

If your job requires you to set aside working space in your home, you are entitled to claim a portion of your rent and maintenance as a business expense.

The same principle holds true for a home office maintained for private consulting work. Experience has shown that the government will generally go along with any apportionment of rent that the taxpayer considers fair and reasonable. One requirement: the area in question must be specifically allocated and equipped for your work, exclusively.

Incidentally, expenses (telephone, stationery, pencils, etc.) of operating a consulting office at home are also deductible. Again, however, the space used for such an office must be set aside and equipped specifically for that purpose, in order to qualify.

An awareness of these tenets of taxmanship is the best insurance against short-changing yourself at income tax time. Many research and production men will, in addition, be well advised to consult a professional expert. In either case, however, a man will have the satisfaction of knowing that he has taken a business-like approach to paring down his income tax. The legal minimum, incidentally, is all the government asks.



◀ Epoxy resin gear moldings

Radio tube embedded in an epoxy resin



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lbs.	Oxidant	These oxidants cost:
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0.74	sodium chlorate (99.5%)	8.75
0.85	potassium chlorate (99.5%)	11.0
2.13	manganese dioxide (85%)	4.5
1.55	nitric acid (38° B _é) ²	6.25
2.32	nitric acid (38° B _é) ²	6.25
2.07	sodium bichromate (99.8%)	11.5
4.93	bleaching powder (30% available Cl)	5.02
1.34	potassium permanganate (98%) ¹	22.5
2.04	potassium bichromate (99.9%)	15.0
1.69	sodium peroxide (96%)	19.0
1.40	chromic acid (99.5%)	28.0
2.02	hydrogen peroxide (35%)	20.2
2.24	potassium permanganate (98%) ³	22.5
0.56	chlorine dioxide (100%)	98.0
1.14	sodium chlorite (83%)	58.0
5.99	potassium persulfate (94%)	18.0
5.01	ammonium persulfate (95%)	38.0

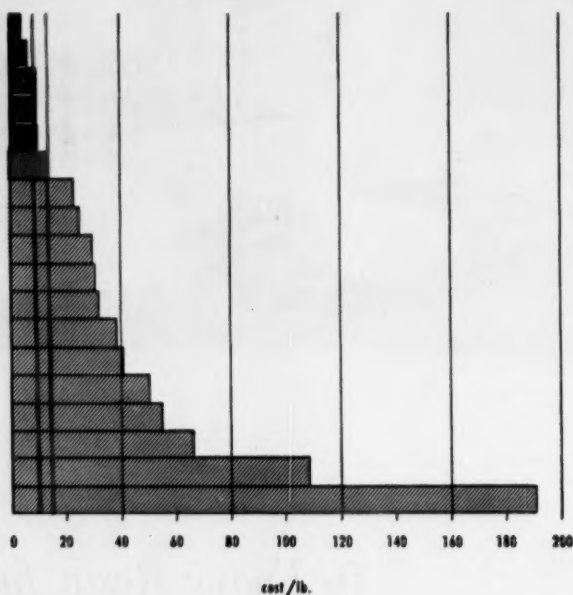
1.) $MnO_2 = Mn + \frac{1}{2}O_2$

2.) $N + \frac{1}{2}O_2 = NO$

3.) $MnO_2 = MnO + \frac{1}{2}O_2$

4.) $N + \frac{1}{2}O_2 = NO$

At the costs indicated on the chart, ozone is economically equivalent to these commercial oxidants. At today's 10-15¢/lb. it has an advantage over the agents below nitric acid; it still lags behind the chemicals above nitric.



Second Wind for Ozone

Attracted by slipping ozone costs and recent successes of the gas in pharmaceutical and fatty acid production, scores of chemical firms are taking another look at the oxidant they once considered too expensive. Just where the gas's next commercial application will appear is a matter of conjecture. But this week it looked as if ozone were headed for a broader career in upgrading relatively low-cost raw materials.

That's where the bulk of today's ozone research is concentrated—olefins, terpenes, coal chemicals and fatty acids all are giving the gas a chance to parade its talent for oxidation.

Today, moreover, the cost of ozone in many of these reactions reportedly is competitive with that of most chemical oxidants, with the exception of air or oxygen. But even against the latter, ozone may yet be competition to be taken seriously. Prof. William Mosher, University of Delaware's veteran ozone researcher, believes that ozonation

reactions' high specificity, high yields and relatively low temperature and pressure requirements may largely offset the cost disparity.

Another academic prober, Prof. Nicholas Milas, of Massachusetts Institute of Technology, is similarly optimistic about ozone's prospects. He points out that processes have been developed for the production of organic peroxides from ozone and that consequently there is the possibility that even hydrogen peroxide may one day be made economically from ozone.

That ozone's fortunes should be taking their present turn is not surprising in the light of recent developments.

One of ozone's biggest boosts has been supplied by Emery Industries, Inc. (Cincinnati), which, for the past year, has been using ozone to oxidize oleic acid to azelaic and pelargonic acids. Capitalizing on the specificity of ozone, Emery is using it to cleave the double-bonded oleic at the C9-C10 position, with resultant high yields.

Since Emery has been using ozone (reputedly supplied by a 1-2 ton/day Welsbach generating plant) the price of its azelaic acid has dropped from 54¢ to 43¢/lb. Simple, economical upgrading of other unsaturated fatty acids is shaping up as a prime target for ozone.

Another money-making outlet for the gas is in the synthesis of cortisone where it deftly cleaves the double bonds in side chains without the need for protecting ring unsaturation. This property of ozone—adding almost quantitatively to the unsaturated side chain before attacking ring unsaturation—is the key to the high yields obtained by such cortisone makers as Merck, Upjohn, Schering.

No Cortisone Problem: Cortisone, of course, presents no critical cost obstacle for ozone to hurdle. Consequently, ozone found a niche in cortisone synthesis research right from the start.

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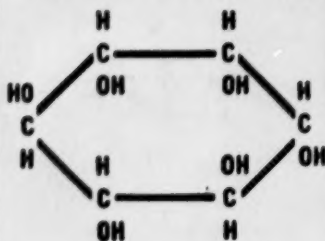
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RESEARCH



WELSBACH'S HANN: Under favorable conditions, lower costs.

ozone in steroid chemistry, used it to ozonize extracted soy steroids in the company's abbreviated experience with cortisone.

Eli Lilly also enjoyed a relatively brief ozone flirtation several years ago while the company was taking part in a cooperative cortisone research project. Lilly retains its ozone generator, gives it occasional work in elucidating the structure of organic materials—a classic laboratory ozone role.

But not all of ozone's talents are in the realm of bond splitting. It is also a catalyst that, under certain conditions, will promote oxygen reactions. Example: the still-developmental German Hibernia process of converting methane into formaldehyde by means of barium peroxide, silver oxide and a low concentration of ozone.

Other cases: ozone-catalyzed (air or oxygen) oxidation of aldehydes to acids; and the ozone-enhanced catalytic action of manganese dioxide in the air oxidation of sulfur dioxide to sulfur trioxide.

Originally put forth as a means of producing sulfuric acid from stack gases of coal-burning power plants, etc., ozone oxidation of sulfur dioxide has not fulfilled the hopes of its developers. Bituminous Coal Research (Pittsburgh, Pa.) reports that the process is technically feasible, but too costly for serious consideration now.

Hurdles to Cross: Like other oxidiz-

ing agents, ozone would seem to be a natural for bleaching jobs, but it has a lot of hurdles to cross before it will pose a threat to them. While ozone will effectively bleach acids, esters, oils, waxes, etc., it will also seize upon any unsaturation present and thereby alter the chemical nature of the product.

Biggest obstacle to ozone in pulp bleaching, and the crux of a great deal of research, is its degrading effect on cellulose. So far, ozone can't match the limited degradation permitted by sodium chlorite or peroxide.

This avidity for cellulose is also holding up ozone's acceptance as a textile bleach. One interesting possibility that relatively cheap ozonides can be made and decomposed to produce hydrogen peroxide *in situ* (hydrogen peroxide bleaches without appreciable damage to cellulosic fibers). The economics of this method depend, in turn, on how cheaply ozone can be made.

Cost is also the principal drawback to a market for the oxidant in heavy chemical manufacture. Union Carbide, for one, has looked at ozone for such oxidations as benzene-to-naphthalene, naphthalene-to-phthalic anhydride, and anthracene-to-anthraquinone. Carbide, however, wants a substantially lower-cost product to work with.

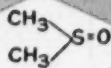
Victor Hann, executive vice president of ozonator-producing Welsbach Corp. (Philadelphia) isn't worried

A BRAND NEW SOLVENT

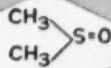
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pounds and is unusually selective in its solubility characteristics for hydrocarbons. Also of particular interest are the high boiling point, high flash point, and the low freezing point, (in eutectic mixtures with water) of Dimethyl Sulfoxide. Listed below are a few of its potential uses.

Potential uses

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- ◆ **Solvent for certain synthetic fibres** such as polyacrylonitrile and acetate rayon as well as others.
- ◆ **As anti-freeze or hydraulic fluid** when mixed with water. (Offers possible cost savings.)
- ◆ **As paint and varnish remover.** Also nail polish remover.
- ◆ **Possibly useful as diesel fuel additive.** (Raises cetane number.)

Physical Properties

Dimethyl Sulfoxide

Molecular weight	78				
Melting point	18.45°C (supercools easily)				
Boiling point (760 mm)	189°C				
Spec. gravity (20°C)	1.100				
Refractive index (n _D ²⁰)	1.4787				
Vapor pressure	at	20°	30°	47.4°	56.6°C
	mm	.37	.79	2.62	5.11
Viscosity 27°C	1.1 cps				
Specific heat	.5 cal/g as solid				
	.7 cal/g as liquid				
Heat of vaporization	ca 175 cal/g				
Heat of solution	60 cal/g				
Heat of fusion	20 cal/g				
Heat of combustion	6050 cal/g				
Flash point (°C)	95° (open cup)				
Coefficient of expansion	.00085				
Dielectric constant	43				

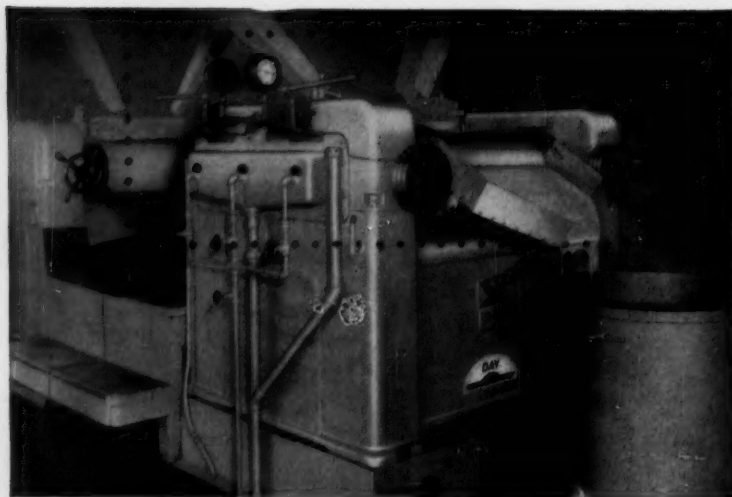
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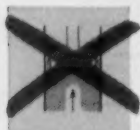
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RESEARCH

about ozone's ability to meet the cost challenge of other oxidants. "Right now," says Hann, "large ozonators (made up for 120 lb./day units) can produce for 10-15¢/lb." Since capital investment and, consequently, amortization is a big factor in ozone-generating cost, size of the generating unit weighs heavily here.

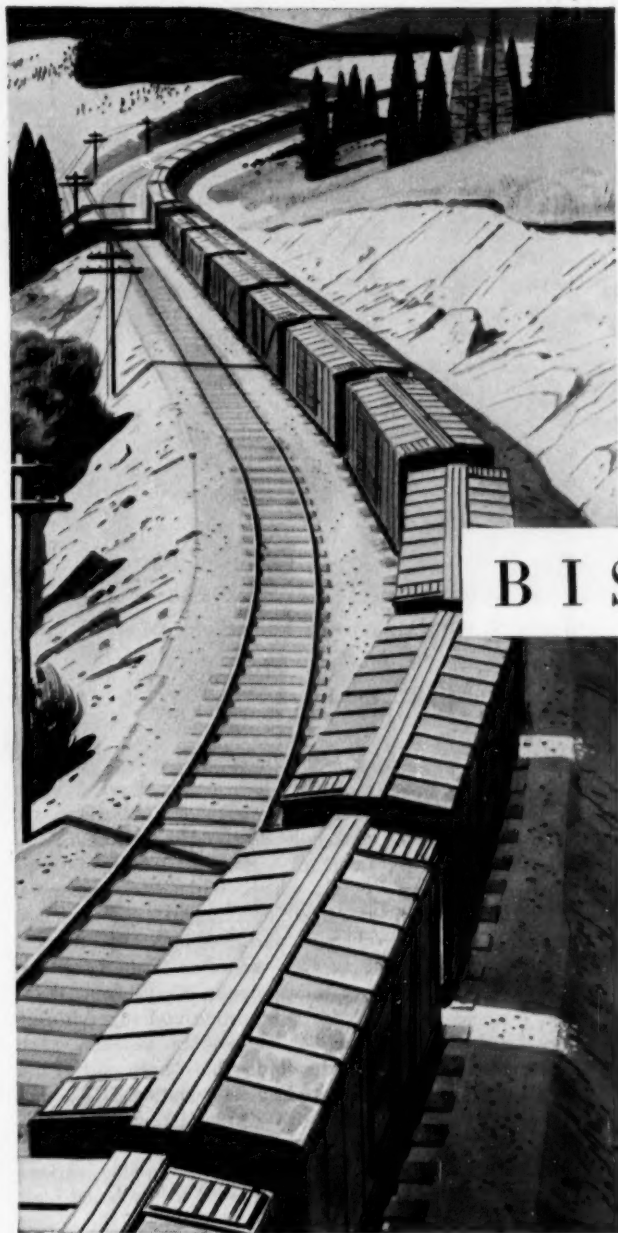
Room for Improvement: Under the most favorable conditions (cheap power and low-cost tonnage oxygen), considerably lower ozone costs are possible, vows Hann. Given tonnage oxygen at ½¢/lb. and power at ½¢/kwhr., it's conceivable that the tab could be sliced to 5¢/lb. This figure is based on the use of once-through oxygen (that could subsequently be used in other processes), the raw material of choice for ozone. Air and recycled oxygen are alternatives, but the former is not feasible for large units and the latter demands extra equipment (for drying, etc.).

Hann admits that ozone must be generated in tonnage quantities to compete with such oxidants as bleaching powder, chlorine, sodium chlorate, nitric acid and, of course, air or oxygen. But ozone doesn't have to be made at minimum costs to compete with sodium dichromate, potassium permanganate and other more expensive chemicals (see chart, p. 56); an ozone plant of several hundred lbs./day capacity may be sufficient here.

Working in ozone's favor is a growing feeling that a product less pure than the standard 2% may be fine for all practical process purposes. Some researchers believe that as many as 80% of potential ozone-consuming reactions could get along beautifully on a 1-1.5% product that would offer distinct cost advantages.

Welsbach, at present, is the only over-the-counter source of large-capacity generators. But General Ozone Corp. (Chicago) has its eye on the potential market for big units.

With gaseous ozone explosion is still somewhat of a problem, particularly in systems that utilize recycled oxygen under pressure. In general, though, the handling hazard has been effectively brought under control. What remains is a twofold job for research: to keep ozone costs on the downgrade; uncover chemical process openings that can give the eager oxidant a chance to turn its potential to profit.



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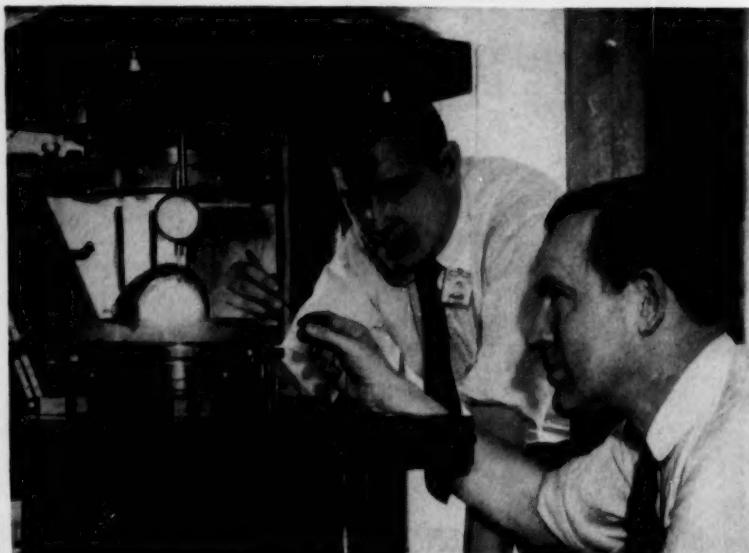
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RESEARCH



GE'S CHENEY (left) AND STRONG: Digging for treasure with a 1000-ton spade.

Precious Stepping Stone

Largely overlooked in last week's excitement over General Electric's diamond synthesis (CW Newsletter, Feb. 19) are the new research vistas opened by GE's specially-developed "diamond mine": a huge press containing a reaction chamber made of material that can stand a pressure of 1.6 million psi. at a temperature of over 5000 F for hours at a time.

GE admits that these extreme conditions aren't necessary for diamond-making, says it has made industrial-grade gems using a variety of undisclosed carbonaceous starting materials over a range of pressure, temperatures, and times (2 seconds to 16 hours).

Theoretically, diamonds can be made in the region of 600,000 to 1.5 million psi. and 1350 F to 5000 F. But at the start of the firm's research into diamond-making four years ago, not even the minimum theoretical requirements could be produced in the laboratory.

Now, the GE research team of Francis Bundy, H. Tracy Hall, Herbert Strong, Robert Wentorf, Anthony Nera and J. E. Cheney is looking beyond its initial triumph at the broader high-temperature, superpressure fields left to conquer. Using a special press, the researchers have already made a high-density quartz and other undisclosed materials, are frank in their

expectations of finding new forms of matter with commercial possibilities.

Included in their objectives are new polymers, and a look at a wide range of organic and inorganic materials which, under superpressures, undergo structural changes, phase changes, and chemical reactions.

In fact, according to Anthony Nera, manager of GE's mechanical investigations section and supervisor of the diamond-making venture, such broader studies have been part of the project since its inception. "GE's success (with diamonds) was no accident," he says, "but a part of a general program for examining various materials subjected to combined high temperature and pressure."

Hidden Treasure: Nera points out that there are probably many hitherto unfamiliar compounds in the depths of the earth, which can now be duplicated using superpressure methods. As an example, he cites high-density silica (coesite) which is formed at pressures above 500,000 lbs./sq. in. and is returned to normal density by heating at 1300 F.

It is reasonable to believe that this compound exists at great depths because at 160 miles below the surface of the earth the pressure is estimated at 1 million psi. and several thousand degrees F. But naturally formed high-density silica is not found on the

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RESEARCH

earth's surface because it is altered to a lower pressure phase on its way to the surface.

Regardless of what the future may bring with regard to superpressure experiments, GE is by no means minimizing its diamond-making achievement. The firm is intent on the possibility of producing the stones as an adjunct to the hard cutting materials (cemented carbides) produced by its Carbology department.

Although GE has made only a few carats of synthetic diamond, and these are tiny (0.01 to 0.04 in. at the longest), they are of industrial grade—and that's the important thing. In quantity, the synthetic gems would be a cinch to tumble the current \$7000/lb. price of industrial diamonds.

Right now, GE hasn't any synthetic stones of gem quality but it is entertaining no doubts as to the genuineness of the stones it has produced. Analytical expert and physicist Herbert Strong has checked out the synthetics via crystal structure (X-ray diffraction), chemical analysis, optical properties (index of refraction), and hardness—finds them identical to natural diamonds.

By way of further substantiation, Strong explains that other GE personnel, previously unfamiliar with the diamond project repeated the synthesis (after instruction), and also confirmed the authenticity of the end product.

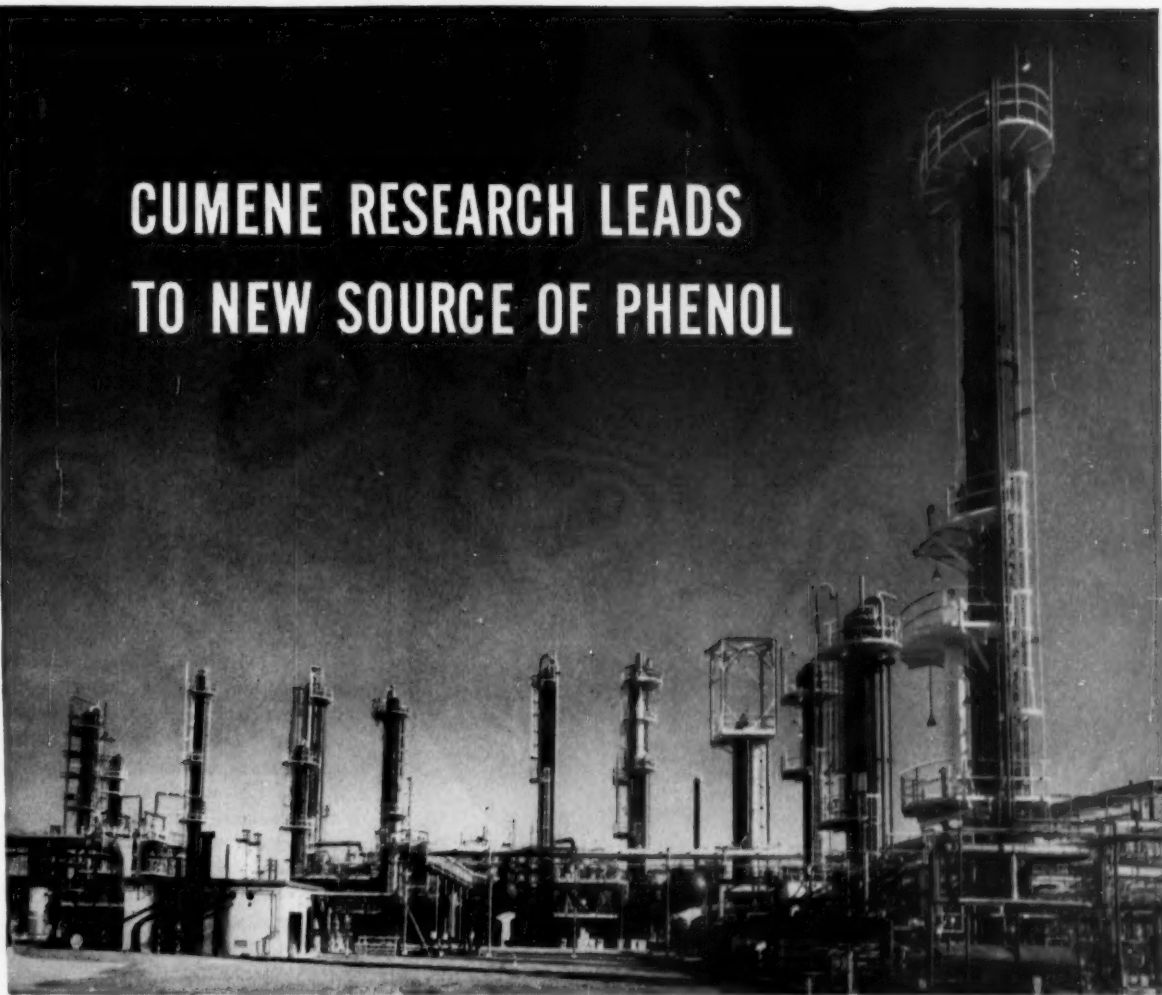
Wait and See: Other synthetic gem manufacturers contacted by CW were noncommittal about GE's diamond discovery. Linde Air Products Co., makers of synthetic sapphires, refused to say whether or not it contemplates researching the high-pressure areas of gem-making (its sapphires are made at atmospheric pressure).

National Lead Co. (New York) says it isn't particularly interested in diamond-making, is confining its gem research to titania and strontium titanate (which retail at about \$15/carat, cut).

Norton Co. (Worcester, Mass.), primarily interested in abrasives, is reportedly adopting a "wait and see" attitude until the GE synthetic diamonds are further evaluated.

GE President Ralph Cordiner feels that synthetic diamonds can be made in increasing sizes and quantities; but their eventual cost is still anybody's guess. There's no doubt, however,

CUMENE RESEARCH LEADS TO NEW SOURCE OF PHENOL

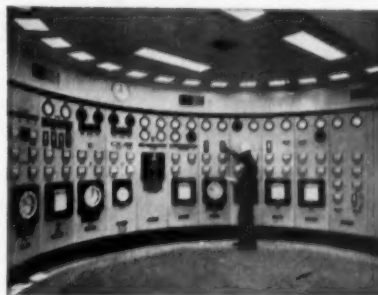


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RESEARCH

that the new areas his researchers have uncovered deserve—and will get—a lot of prospecting.

New TB Starter

A promising new TB-fighting antibiotic made its first official appearance in Atlanta, Ga.,* last week. It bears the generic name, cycloserine, is evoking enthusiasm among tuberculosis-battling physicians and surgeons.

Discovered by researchers Roger Harned and Eleanor Kropp in the Terre Haute, Ind., laboratories of Commercial Solvents Corp., the drug produced clinical improvement in 36 of 37 severely ill pulmonary TB patients who received it over a 3-4 months' period at New York's Metropolitan Hospital.

At this point, the future of cycloserine is indefinite. It's still experimental and months of clinical work will be required to determine whether marketing is justified. If this additional testing proves the drug's worth, Eli Lilly and Co.—which is participating in the research—will take over commercial development efforts. Lilly has tradenamed the drug Seromycin.

One item that will come in for study: toxicity, which forced the withdrawal of the antibiotic in four cases.

On the Way: Look for experimental quantities of a new Bakelite (division of Union Carbide) polyethylene to be showing up in the near future. Now in pilot-plant production at South Charleston, W. Va., the resin is said to possess a high degree of rigidity and temperature resistance: softening points up to 240 F are claimed.

Carbide reports that the material is manufactured under "conditions that approximate atmospheric pressure and temperature," expects it to "open the way to new and expanded uses of polyethylene."

Built and operated by Carbide and Carbon Chemicals, the pilot unit is the fifth link in the chain of the company's polyethylene operations. Plants at South Charleston, Texas City and Sea Drift, Tex., are in large-scale production, while a fourth production unit—under construction at Torrance, Calif.—is due to go onstream in about one year.

* At the 14th Veterans Administration-Army-Navy Conference on the Chemotherapy of Tuberculosis.

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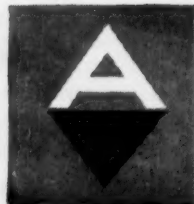
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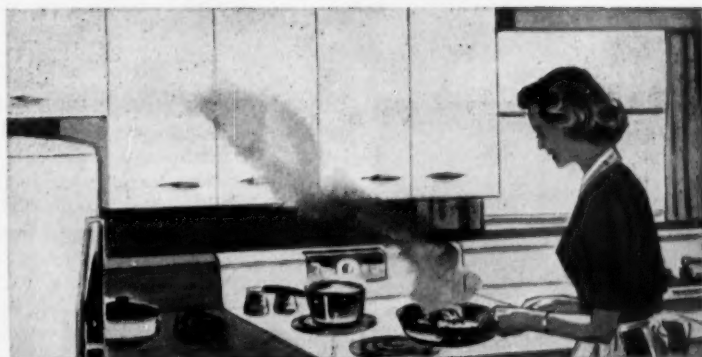
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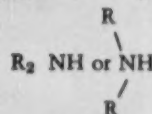
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Because of the unsaturation in both compounds, these two secondary amines are more easily liquefied than the corresponding saturated secondary amine (Armeen 2HT), and will show better solubility in organic solvents.

These products are so new that possible uses have not yet been explored extensively. However, the chemist acquainted with the reactivity and polar substantivity of amines and their derivatives will recognize the potentialities of Armeen 2T and Armeen 2S in corrosion inhibitors, lubricant additives, rubber processing, textile treating compounds, emulsifiers and de-emulsifiers, etc.

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☐ Armeen booklet ☐ Arquad booklet

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PRECHILLING: Packaged coolers edge ice cubes out of the picnic basket. RAM SALVENDULO

For a Cool \$2 Million

"Portable ices," prechilled containers of icelike gels, loom as big specialty for coming hot months.

Consumers felt the products' convenience was worth \$2 million last year, although they're made up of mostly water, with a suitable gelling agent.

With the weather as cold as it is, it takes will power as well as foresight to plan products for selling during next summer's hot spells. But that's just what makers of "portable ices" are doing now, readying for what they feel will be their biggest year.

Competition will be sharper than ever, with firms like Hamilton Metal Products Co. (Hamilton, O.) offering for the first time its new Scotch Ice for its Scotch Koolers.

Among the others gunning for the same market—estimated at \$2 million retail last year—are Chemical & Fibre Associates (Azusa, Calif.) with its Sno-Gel, one of the first; National Chemical Refrigerants Corp. (Boston), Re-Fridgit and Kold King; Poloron Products Inc. (New Rochelle, N. Y.), Polor-Ice; Earl Scheib Enterprises (Los Angeles), Frigee Freeze; and Bud Wilson, Inc. (Beverly Hills, Calif.), Perma-Ice.

They're all eyeing the nation's 60 million picnickers, 60 million lunch-

box carriers, 50 million licensed hunters and fishermen, and 20 million owners of portable iceboxes.

Plenty of Chores: These synthetic ices are packaged in metal containers (generally pint or quart), or in polyethylene or vinyl "pillows," tubes, or "blankets." They are placed in the freezing compartment of a refrigerator until solid, then packed with the food, drink, or item to be chilled. They're reusable; unlike melting ice, they cause no mess.

They're also sold for industrial cooling—keeping quick-frozen foods solidly frozen during shipment, for example. Especially formulated for almost any temperature range, they can keep materials colder than can melting ice (32 F). (Virtually all the products can be used as hot-water bottles, too, by heating them in boiling water; but few are so advertised.)

Cold Theory: One object in developing the ices (other than that of convenience) has been to get a ma-

terial that has a greater cooling power per unit weight (specific heat) at sub-freezing temperatures than ice.

Ice is excellent for keeping things about 32 F—in melting, a pound takes about 80 Btu. (heat of fusion), theoretically enough to pull a quart of beer down from about 80 F to a drinkable 40 F. And though ice can be cooled below 32 F, its cooling power falls way off—it varies a lot but is roughly half that of liquid water (heating a pound of water from 40 F to 50 F would take 10 Btu.'s; raising a pound of ice 10 degrees would require about 5).

Synthetic ice makers, then, sought a material that freezes well below 32 F, has a high specific heat and a high heat of fusion.

Hospitals often need materials of this sort for ice bags, and many use a mixture of glycerol and water. It is nontoxic, and when made with 35% glycerol will have an average specific heat of over 0.8 from 35 F until it freezes at 10.4 F; a heat of fusion of about 3.7, and a specific heat (in the frozen form) of well over 2, down to 0 F.

Tailored Water: The use of a polyol-water solution, however, does not seem to be common in the trade, perhaps because of cost. According to Foster D. Snell, Inc., most of the products it has analyzed contain water with small amounts of a gelling agent like starch, tapioca, or carbonylmethyl cellulose. Colorants are occasionally added, along with bacteriostats, fungistats (one company claims 11 ingredients). Apparently, none lists specific heats on the label—it would mean little to many users.

There is considerable dispute among sellers about the merits of liquid types compared with gels, and about plastic packs versus cans. (Chemical & Fibre Associates, offering Sno-Gel in both, says buyers prefer to start out with canned ice, later switch to plastic packs.)

Although makers of portable ice are just developing both home and industrial markets, price adjustments seem certain this year. Many canned products have sold for \$1.70/qt.; but 98¢/qt. will be more common this year, with some for 69¢/qt. The price cuts could bring a lot of new business to the makers of these handy refrigerants.

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SPECIALTIES



Chemical Scores in Golf Tourney

RICH GREEN in color, the fairways at this month's Phoenix Open Golf Tournament intrigued chemical makers as well as golf fans. Tourney officials purchased 92 lbs. of green pigment from Kreiger Color & Chemical Co. (Los Angeles), sprayed it on the fairways to improve the appearance of the dull-brown Bermuda grass on the 60-acre course.

Mixed with hot water (*see cut*), the pigment (which was shipped

in fiber drum with Dow's Styron polystyrene label) was applied 1 lb./acre (about \$6.50 for materials) by a tractor-drawn watering unit. Officials and spectators were pleased by the way the colorant survived a 2½-in. rainfall, didn't rub off on shoes, and made the course look attractive. A number of Phoenicians admitted serious interest in tinting their home lawns during winter months to replace costly reseeding with rye grass.



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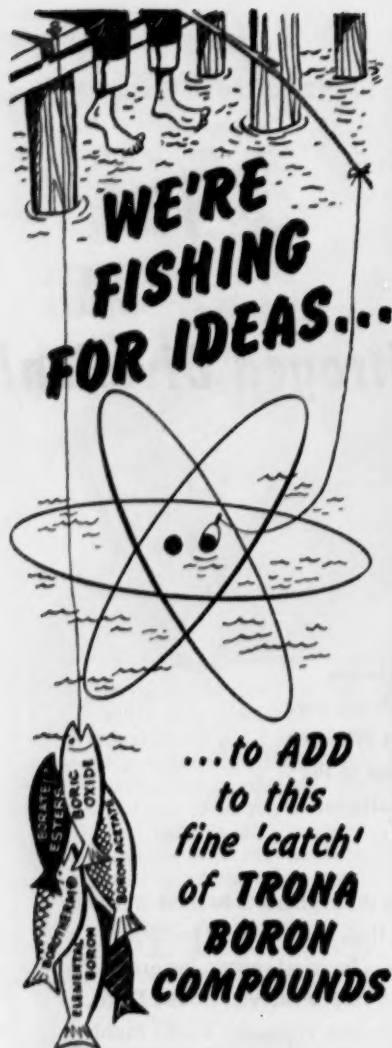
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SPECIALTIES



PARKER'S EXPORT EXPERT*: Outlining the market for liquid-lead pencils.

Best of Lead and Ink

You can now get a pencil that writes like a ball-point pen, but erases like "lead." Parker Pen Co. (Janesville, Wis.) and Scripto (Atlanta) have already shown off their products, and it's a sure bet that other companies will be introducing similar writing instruments within a few weeks.

The sales blurbs with which Parker debuted its "liquid-lead" pencil predicted they would revolutionize the industry, and take the place of mechanical pencils. Parker even went so far as to halt all manufacture of its conventional mechanical pencils. Not all manufacturers, however, are that hopeful for the liquid-lead devices.

Scripto, for example, claims it could have introduced its Fluidlead pencil two years ago—and it has been tooled up for volume production since last year. Company President James Carmichael says he felt no reason to bring

out the product because it competes with the firm's regular pencils and ball-point pens. The Parker move forced his hand.

Graphite or Not: The new liquid leads are definitely not ink, since inks penetrate the paper fibers; the big advantage of lead is that it stays on the surface of the paper, can be erased. But the material does have the color of 2H lead (colored leads are on the way).

There is a major difference in the currently offered Scripto and Parker products. Parker claims to have "an oleaginous graphite suspension that combines the paradoxical elements of maximum writing density and erasability." Scripto's formula, according to Carmichael, is now being patented, and hence is still under wraps. But, he says, it isn't graphite.

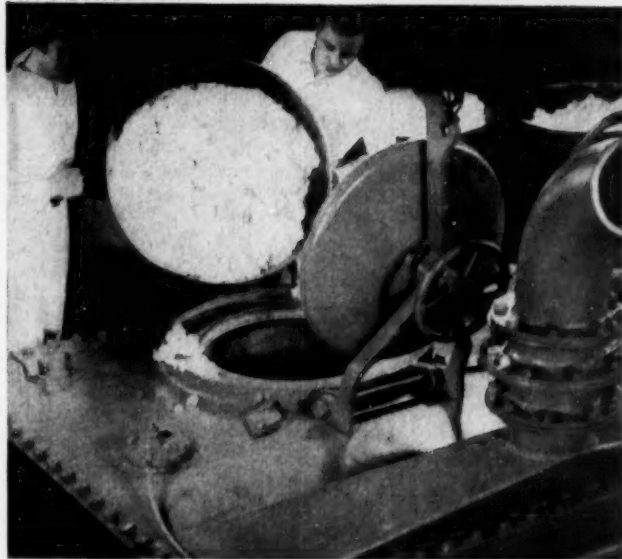
Scripto bought its formula a couple of years ago from Fran Seech, Hun-

* C. E. Boggs, export manager.

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Isopropyl Ether
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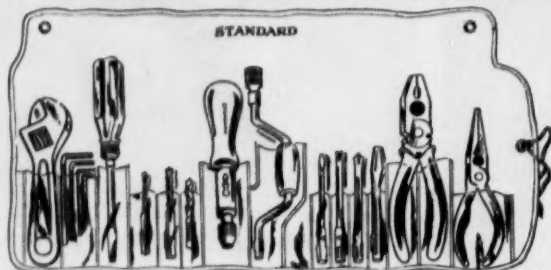
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SPECIALTIES

garian-born developer of nonsmearing ball-point inks. Such materials have been known in the trade for some time, but they've been held back by a lack of shelf life (the suspension separates after some time).

Eastern Opening: Scripto was selling its Fluidlead in New York department stores early this month, and figures to be national with it by this week or next (production is currently about 30,000 units/day). Parker, not yet retailing its model, plans to have it fully available by April.

Both products look very much like ordinary mechanical pencils. Scripto prices its model at 49¢; Parker plans models in a variety of price ranges. Scripto features a replaceable cartridge (point is nonretracting), says each cartridge ought to last about as long as six or seven lead pencils.

Thus, the new writing instrument ought to be competitive with the wooden as well as the mechanical pencil. Chief selling point is that it doesn't have to be sharpened. But it makes a line like the sometimes-criticized "characterless" line of ball-point pens.

Although Scripto doesn't show the enthusiasm Parker does, Carmichael does admit: "This is the first time in our history that every type of outlet has immediately wanted a new product . . . on the other hand, people are still buying fountain pens even though the ball-point pen was supposed to obsolete it."

Plastic Jacket: Polymer Dispersions Co. (Staten Island, N. Y.) is now selling a series (Kylon 200) of high-solids vinyl latices for coating rubber and plastic foams, paper and textiles.

Housekeeping Help: For removing wax and cleaning floors, Workkleen has been introduced by World Chemical Co. (Tulsa, Okla.), a recently established firm.

Two-Faced: Carbide and Carbon Chemical Co. (division of Union Carbide and Carbon Corp.) has a new package for its Crag Herbicide-1. Now being introduced for crabgrass control in lawns (it is suggested for application in early spring), it is so labeled on one side of the single-pound (\$4.49) container. Label on the other side promotes the product for garden weed control—dealers can keep abreast of the lawn and garden

SULPHUR GOES ATOMIC

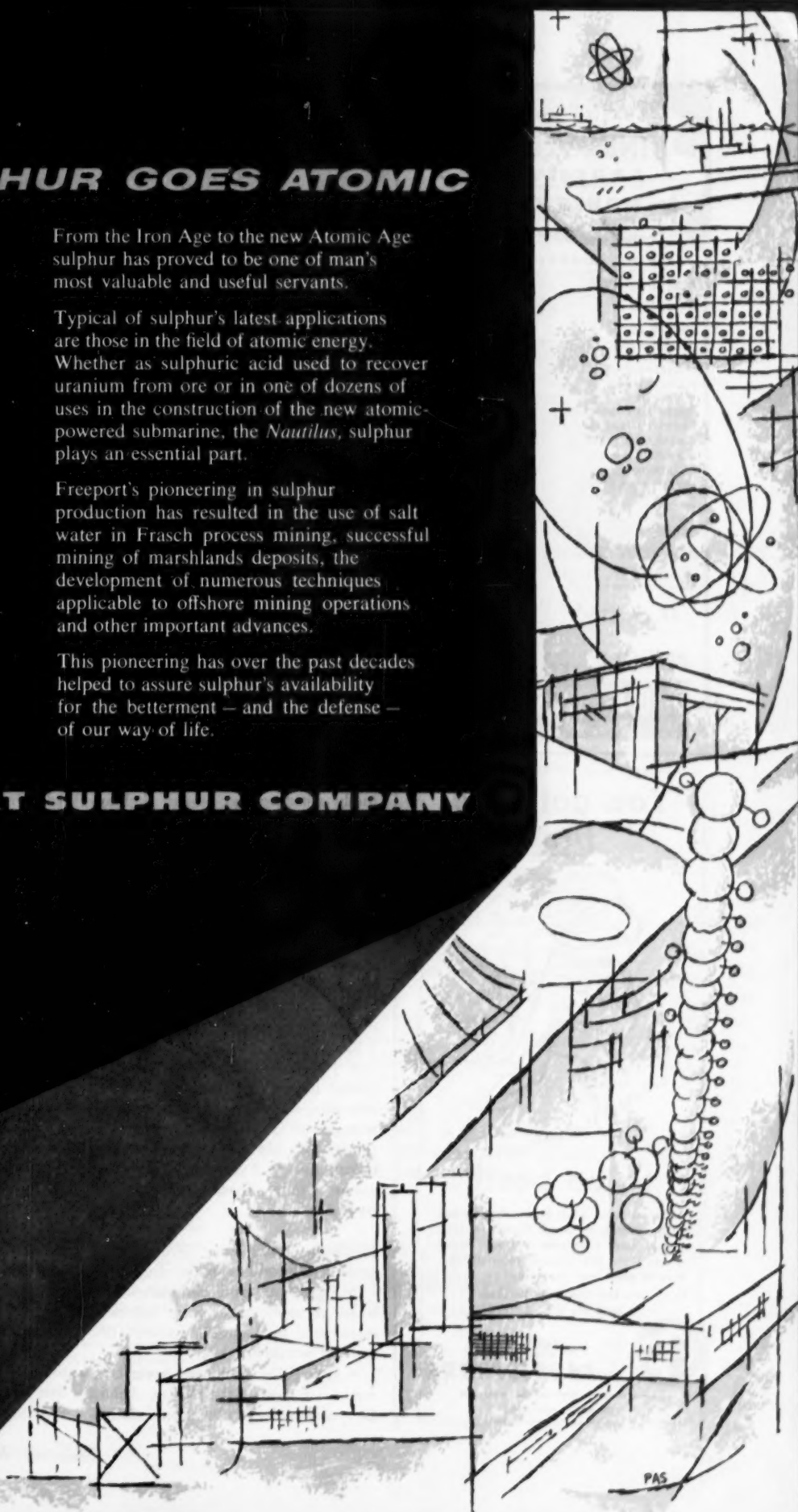
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SPECIALTIES

market by just turning the container around.

Autoist Specials: Service station dealers and motorists will soon be buying Du Pont's new Speedy Car Wash Pouch. A Dacron fleece bag 7½x9 in., it is filled with a small amount of car-washing detergent, then zipped shut. Wetting and squeezing give ample suds, Du Pont says, to wash a car, which need only be rinsed afterward. Twelve packets of detergent for the pouch are included in a \$2.75 kit.

• **Permatex Co. Inc. (Brooklyn)** has developed a single-package product for car radiators. Kit includes a radiator cleaner, and a combination sealer and antirust agent. Price: \$1.50.

Industrially Aimed: Some new chemical products with industry application:

• **Separan 2610**, a new flocculating and coagulating material developed by Dow Chemical Co., is suggested for use in metal, coal, and similar mining operations.

• **Cab-o-sil**, a white, pure siliceous pigment, is offered by Godfrey L. Cabot, Inc. (Boston). Said to be 99-99.7% pure silicon dioxide, and virtually moisture-free, it can find application in paints (as flattening agent, suspending agent, thickening agent) or in other products as an antislip ingredient or extender.

• **Voidox** is an anti-oxidant for food and industrial use developed by Guardian Chemical Corp. (Long Island City, N.Y.). A waxy, white substance, without odor or taste, it is said to retard rancidity, darkening, and loss of potency in concentrations as low as 1 lb./ton.

• **J-1190 Primer**, base-coating compound for glass, porcelain and other ceramics, has been devised by Armstrong Cork Co. (Lancaster, Pa.). The primer is said to prevent surface failure due to hydration, thus allow secure, strong adhesive bonds on the ceramic.

Medicine Chest: Some developments, some new products in the drug field:

• **Piptal**, an oral cholinolytic for relief of peptic ulcer pain, has been introduced by Lakeside Laboratories, Inc. (Milwaukee).

• **Calcidrine Troches**, apricot-flavored, are now on the market. Abbott Labs makes the combination sedative-

expectorant tablets of calcium iodide, ephedrine, dihydrocodeinone, and Nembutal.

• **Selsun jelly** is another Abbott product, suggested for control of seborrhea in eyebrow and auditory canal areas.

• **Serpine tablets**, an isolated crystalline alkaloid of rauwolfia serpentina, is now marketed by Pitman-Moore Co. (Indianapolis). It's suggested for treatment of emotional tension.

Chick Saver: Lederle Labs has combined vaccines for Newcastle disease and infectious bronchitis in a single dust-pump device. Sprayed into breeder houses, the dust can immunize up to 5000 birds per hour.

New Sticker: Gardeners will get a chance to use Du Pont's Spreader-Sticker for the first time this year. Now packaged for home use, the material has long been available to commercial growers. About 8-10 drops of the sticker added to a gallon of spray is said to make soluble fertilizers, insecticides and fungicides adhere better to the plants, work more effectively.

Add One: Foster D. Snell, Inc. (New York) has purchased Crippen and Erlich Laboratories, Inc. (Baltimore, Md.). The acquisition includes analytical, fuel and oil testing, organic, and paint and varnish laboratories; a machine shop; and corrosion-testing facilities.

Hot Coating: For coating such products as exhaust manifolds, Vita-Var Corp. (Newark, N.J.) is now selling a high-temperature-resistant paint, Vita-Var No. 14550. It is said to give corrosion resistance to ferrous surfaces at temperatures up to 2000 F.

Corrosion Foe: Also for inhibiting corrosion, Harry Fales (Wilmington, N.C.) has combined an alkyl alcohol (78%), alkyl salicylate (12%), mineral oil (7%), and oleic acid soap, camphor, potassium iodide, iodine crystals, and ammonia water in fractional percentages (U.S. Pat. 2,701,206).

Silver Saver: Adolph Renold (Springdale, Conn.) has worked out a process to treat silverware wrapping cloth so that it prevents tarnishing (U.S. Pat. 2,701,238, assigned to Bates Mfg.

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SPECIALTIES

Co.). Renold's idea is to impregnate the cloth with a silver compound that will react with hydrogen sulfide before the tableware wrapped in it can tarnish. The cloth is also impregnated with a filler and drying oil.

Soft Flux: For soldering copper, brass and tinplate, John De Rosa and Chester Snell have devised a soft flux (U.S. Pat. 2,700,628, assigned to the U.S.) composed of rosin-modified maleic ester resin (25%), cetyltrimethylammonium bromide (1%), amyl acetate (10%), and alcohol (64%).

Cold Proof: Claimed to be noncorrosive, a salt-type antifreeze solution has been patented by Fred Neveling (New York) (U.S. Pat. 2,700,653). Formulation is calcium chloride (22-36%), water (58-72%, for a total of about 94%), a sugar (mono-, di-, or tri-saccharide, 4-5%); fractional percentages of sodium, potassium, or lithium nitrate; barium hydroxide, a nitrogen-containing compound (like morpholine or triethanolamine) soluble starch, and a trace of urea.

Bulletins: Among the latest:

- London Chemical Co. (Chicago), has a brochure on its solders and fluxes.
- National Lead Co. (New York) has a new guide to its Dutch Boy Paints.

Airy Wax

Specialties formulators may soon be hearing about raw materials derived from Spanish moss, the parasitic plant that festoons oak trees in many areas of the South.

Robert Bennett, at the University of Florida, has come up with these materials from the moss:

- Carnauba-like wax. Obtained in better-than-4% yields, it is pale yellow, has a "melting point and polishing ability similar to carnauba."
- Fibers for reinforcing plastics. Dewaxed moss, retted in water for five days, gives a fibrous material suggested for plastic reinforcement.
- Oil with cheese flavor. From the retting liquor, yields (0.657%) of an oil with a cheeselike flavor and odor are obtained.
- Gum for adhesives. Complete evaporation of the filtered retting liquor gives a pale-brown gum—possible uses: in glues, inks.

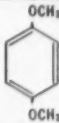



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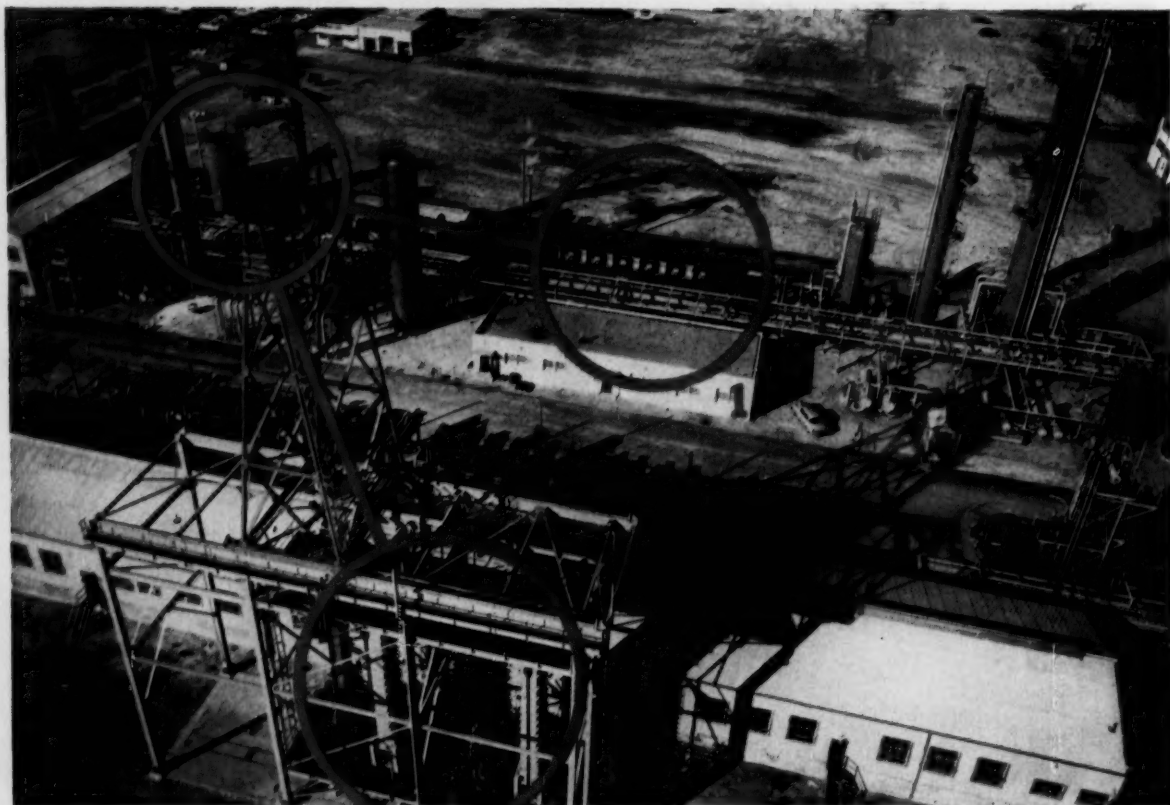
For the past 18 months, Frank has been working with our ethers of hydroquinones, D.M.B. and H.A., both in the field and in the laboratory. His experience with these intermediates is available for your use.

A careful review of the properties of these chemicals may suggest an answer to one of your product or processing problems. Address your correspondence directly to Frank Wedge, **ANSUL CHEMICAL COMPANY**, Dept. C-21, Industrial Chemicals Division, Marinette, Wisconsin.

PROPERTIES	ANSUL ETHER-D.M.B. 1,4 Dimethoxy Benzene (Hydroquinone dimethyl ether)		ANSUL ETHER-H.A. Hydroxy Anisole (Hydroquinone monomethyl ether)	
Molecular weight	138.16		124.1	
Melting point	56.3°C.		52.5°C.	
Boiling point	213.0°C. @ 760 mm Hg.		246.0°C. @ 760 mm Hg.	
Density, g/l.	1.038 @ 55/55°C.		1.55 @ 20/20°C.	
Solubility	@ 25°C. in grams/100 grams of solvent insoluble 177.0 233.0 33.3 150.0		@ 25°C. in grams/100 grams of solvent 4.1 69.5 426.0 456.0 245.0	
in water				
in benzene				
in acetone				
in ethanol				
in ethyl acetate				
Color and form	white to colorless flakes		colorless, waxy flakes	
Odor	pleasant (sweet clover)		characteristic	



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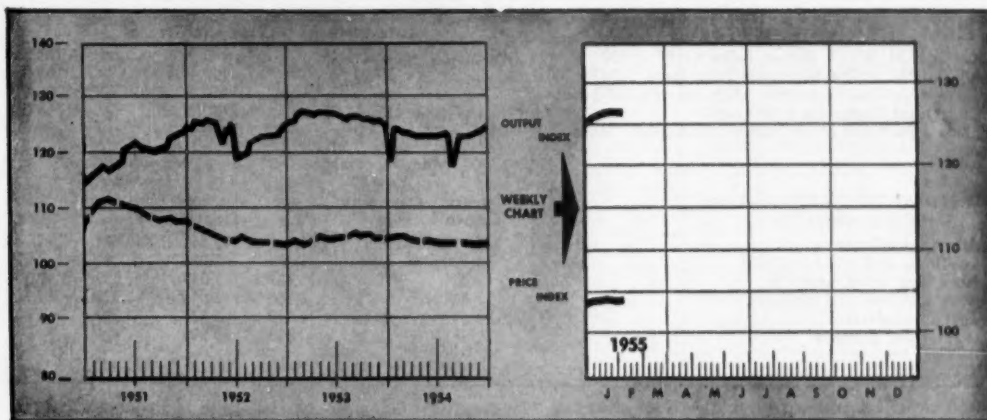
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MARKETS



CW Index of Chemical Output—Basis: Total Man Hours Worked in Selected Chemical Industries
CW Price Index—Basis: Weekly Prices of Sixteen Selected Chemicals

MARKET LETTER

A hike in government demands for toluene may be under consideration by defense planners. There's no official confirmation as yet, but trade reports persist that defense activities will require more aviation gasoline—and that is, and has been, the petro-aromatic's biggest outlet.

Actually, the defense-slated take of both coal tar- and petroleum-derived toluol, over the past few months, has been only a fraction of the amount taken just about a year ago. But even if the government should boost its requirements, chances are that industrial customers would not immediately feel the pinch. Reason: though demand from the latter has of late been fairly steady, there have been instances of some surpluses. Exports, too, have been lighter.

Few observers, however, expect posted quotations to change—one way or the other—very soon.

One big change affecting plastic foam makers occurred last week when Mobay Chemical slashed 6¢/lb. off prices of its special-grade polyester chemicals. The material—compounded especially for combining with isocyanates to form fully elastic foams—is selling for 59¢/lb. (in 20-drum quantities).

Until now the polyester has been imported from Germany, with some material manufactured at Mobay's Anniston, Ala., interim plant. Stepped-up production facilities at Anniston are behind the current price reductions. Whether or not consumers are in for further savings is a question for the future—one that will be answered when Mobay's now abuilding full-scale plant at New Martinsville, W. Va., begins pouring out both polyesters and isocyanates.

A rash of plant closings, on the other hand, is this week focusing attention on another area of the nation's marketplace. At least five major soybean processors are—or will—curtail operations, while a sixth indicates it "will consider a shutdown if the price situation doesn't improve."

Archer-Daniels-Midland is closing its Decatur, Ill., plant for

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
CHEMICAL WEEK Output Index (1947 = 100)	126.4	126.9	123.5
CHEMICAL WEEK Wholesale Price Index (1947 = 100)	104.4	104.4	104.9
Bituminous Coal Production (daily average, 1000 tons)	1448.0	1450.0	1266.0
Steel Ingot Production (1000 tons)	2153.0 (est.)	2150.0 (act.)	1756.0
Stock Price Index of 13 Chemical Companies (Standard & Poor's Corp.)	382.0	376.4	266.0

MONTHLY INDICATORS—Trade (Million Dollars)

	Manufacturers' Sales			Manufacturers' Inventories		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
All manufacturing	\$24,917	\$24,361	\$24,126	\$43,835	\$43,811	\$46,722
Chemicals and allied products	1,820	1,815	1,601	3,074	3,076	3,093
Paper and allied products	734	719	701	1,039	1,053	1,044
Petroleum and coal products	2,261	2,171	2,186	2,646	2,729	2,725
Textile products	1,017	1,026	1,040	2,370	2,337	2,513
Leather and products	341	308	267	591	579	582

an indefinite period; A. E. Staley's Soybean Division cut back to half capacity for four days; General Mills' Belmond, Iowa, installation is out temporarily, but may go back this week.

For two weeks (starting Feb. 18) Checkerboard Soybean will cease operations, while Spencer Kellogg went down for three days last week. Decatur Soybean is the firm planning to stay open at least until the end of the month, when it, too, may follow suit.

The unhappy condition is reportedly sparked by farmers' holding large speculative quantities of soybeans. Crushers complain there's not enough reasonably priced cash beans available to profitably process into meal and oil.

It pays to be a reseller these days, though, especially if you've got some nickel or copper chemicals to peddle. Nickel producers, for instance, continuing to reserve their output for regular customers, are letting loose practically nothing in the spot market. Some salts are arriving from abroad—principally from Germany—but these move fast at premium prices.

Sidelight: one report was that Russia—via the Tass Agency in New York—last week was questing nickel sulfate.

How not to disrupt a market. That was the nub of Midwest sulfuric acid producers' suggestions made to the Business & Defense Services Administration in Washington last week (*CW Market Letter*, Feb. 12).

Instead of the currently used single open-bid method of disposing of the annual output of spent sulfuric from the Joliet, Ill., arsenal (estimated to be about 25,000 tons/year), marketers would have the U. S. do it some other way. Some suggestions tendered: shut down the arsenal acid plant and buy oleum from industrial producers (who would take back the spent acid); negotiate sales to local acid makers only; lease the plant to a neighborhood producer; install decomposition facilities.

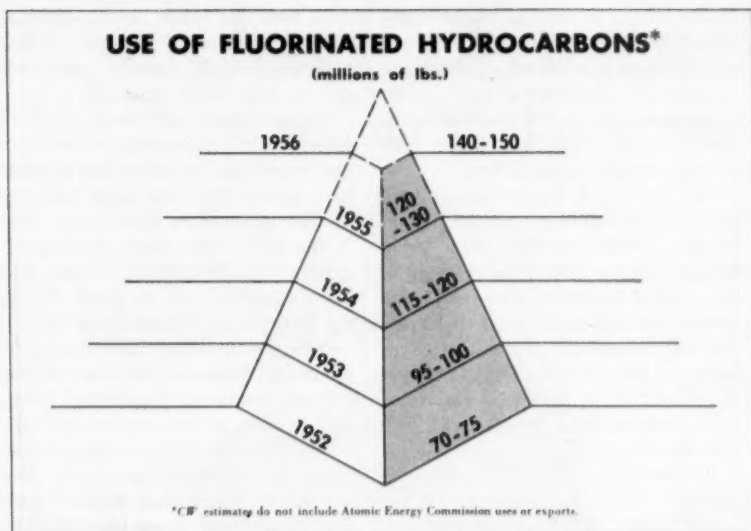
BDSA will ponder the advice, probably recommend, within the next couple of weeks, both long- and short-term courses to Army Ordnance.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending February 21, 1955

DOWN

	Change	New Price		Change	New Price
Copra, West Coast, c.i.f., ton	\$10.00	\$172.50	Tallow, fancy, tanks, divd.	.005	.0825
Coconut oil, crude, tanks, NY	.00375	.13625			

All prices per pound unless quantity is stated.



PYRAMIDING CONSUMPTION, but production will reach the apex first.

Enough for Ten Years?

Demand for fluorinated hydrocarbons* is expanding with much the same force they show as aerosol propellants or in refrigeration compression systems (see chart). Du Pont has this past week pinpointed the site, Antioch, Calif., for its next and fourth U.S. plant to produce fluorinated hydrocarbons (CW Market Letter, Aug. 7, '54)—the first unit west of the Rockies.**

And within six more months Du Pont expects to bring onstream a large monochlorodifluoromethane (Freon 22) plant at Louisville, Ky. This will augment its output of such basic fluorocarbons as dichlorodifluoromethane and trichloromonofluoromethane at Deepwater Point, N.J., and East Chicago, Ind. Expansions at both of these sites were completed early last year.

Not to be outdone, the only other major producer, General Chemical, is also scheduling midyear operation of a plant now going up at Danville, Ill. This installation is located near fluorspar deposits—convenient should the firm decide to produce hydrofluoric acid, major fluorocarbon raw material. Currently General makes the

acid at other installations.

The new Danville plant will supplement General's first fluorinated hydrocarbon installation at Baton Rouge. In the past 12 months capacity for dichlorodifluoromethane and trichloromonofluoromethane was doubled at the Louisiana plant, and General also added facilities for commercial production of monochlorodifluoromethane and trichlorotrifluoroethane.

A Market Propelled: These increases in plant capacity are today's outgrowth of a many-branched demand by packers of aerosols and manufacturers of air-conditioning and refrigeration units, and plastics.

Because the quantities of Freons and Genetrons per aerosol container vary widely (from 80-85% in space insecticides, 50-60% in hair lacquers, to 5-8% in shaving lathers), a clean-cut estimate of total consumption is beclouded with assumptions. This year, aerosol propellant sales should be about 60 million lbs. of fluorinated hydrocarbons (in some 250 million aerosol units). That compares with last year's estimated 55 million lbs. (in about 200 million units). These totals highlight the swift climb from '53's estimated 45 million lbs. (140 million units) and '52's 30 million lbs.

Chief promoters of fluorinated hydrocarbon propellant sales today are in the field of personal products;

growth in insecticide outlets has decelerated. Some 30 million hair lacquer units were filled last year—just double the number in 1953. Shaving lather makers turned out close to 55 million units last year—a 70% rise above '53's estimated 32 million units.

The bulk of all the fluorinated propellants are dichlorodifluoromethane, or mixtures of it with trichloromonofluoromethane (included as a pressure depressant). Where the propellant is mixed with moisture-containing ingredients—as in shaving creams, colognes, and perfumes—dichlorotetrafluoroethane is preferred, often combined with dichlorodifluoromethane.

Push for Low Pressure: Some lusty cries went up for dichlorotetrafluoroethane during some shortage-racked periods in late '53 (CW Market Letter, Aug. 22, '53), and in the spring of '54 when AEC purchases took the major portion of Du Pont's output. Reason: various companies licensed by patent-holder Zonite Products Corp. were just ready to turn out ultralow-pressure glass aerosols, which require dichlorotetrafluoroethane for safety. However, as soon as the pinch was over, the push for glass aerosols was renewed.

Tussle for Top: Aerosols have in a decade captured nearly 40% of the total fluorinated hydrocarbon market. Still, there's no denying that air-conditioner usage has a high potential. Right now 70-80% of new industrial and commercial refrigeration units is being designed for the use of fluorinated hydrocarbons. That percentage estimate should be upped steadily. Why: Freons and Genetrons offer safety (nonflammability and low toxicity), wide boiling ranges, and are adaptable to all compressor types.

To boost that take the fluorinated hydrocarbons will have to corral the 10-20% of the commercial refrigerant market still held by ammonia. Ammonia equipment still holds sway in breweries; ice-making, meat-packing and warehousing plants; cold storage lockers, and dairy process installations. Small areas of the refrigerant market are also held by methyl chloride (3%); ethane, propane, butane, etc. (total of 3%); carbon dioxide (2%); methylene chloride (1%), and ethyl chloride and sulfur dioxide (less than 1%).

The workhorse of the fluorinated

*Du Pont's tradename for fluorinated hydrocarbons is Freon; General Chemical's is Genetron. Carrier Corp. uses the trademark Carrene on some of its own mixtures of fluorinated hydrocarbons supplied to it by the two basic producers.

**Du Pont Co. of Canada, too, is branching out; it's putting up a Freon plant at Maitland, Ont.

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MARKETS

hydrocarbons is dichlorodifluoromethane. It's in practically all household refrigerators, just about all the home window air-conditioning units under ¾-ton capacity, and in packaged residential units, including those with central stations, up to 3 tons.

It's also used in ice cream and frozen food storage cabinets, food lockers, water coolers, etc., using reciprocating or rotary vane compressors; and in industrial water and brine cooling systems. (to minus 110 F) employing multistage centrifugal compressors. But dichlorodifluoromethane shares outlets in industrial and commercial air conditioning with trichloromonofluoromethane.

Meanwhile, monochlorodifluoromethane (Freon 22, Genetron 141) is pitted against dichlorodifluoromethane in many refrigerant markets. (Although the monochloro costs more

than twice as much as the dichloro, less of the mono is required to do a comparable job. Result: equipment can be built more compactly.)

Rising output will likely drop the price of monochlorodifluoromethane a few more notches below last September's 5¢ cut. It is now going into most of the window air conditioners from ¾ ton to 1½ tons, most of the packaged air-conditioner units of more than 3-ton capacity, and in about 75% of the home food freezers being built.

New Pyramiding: Refrigerant sales are bound to soar as the nation strives for year-round air-conditioned living. And as soon as toxicity tests are conducted, these fluorine compounds may build an enormous market in food aerosols. But long-term estimators say that even these pyramiding markets will not exceed, within a decade or more, the capacity now being built.



Hot Business

URANIUM OUTPUT statistics are not available, of course, but a sky-climbing U.S. production curve is clearly indicated by some pertinent observations made by Carbide and Carbon's U.S. Vanadium Co.

On the Colorado Plateau—which may well be the largest source of uranium in the world—the number of operating mines, the company

points out, has jumped in two years from 200 to about 600. Expenditures for mining and refining uranium ores from the 180,000-sq.-mile area have more than trebled in the same period, increasing from \$30 million in '52 to a \$100-million/year rate in 1954

Miners (*above*) are pushing a car of uranium-rich carnotite ore.

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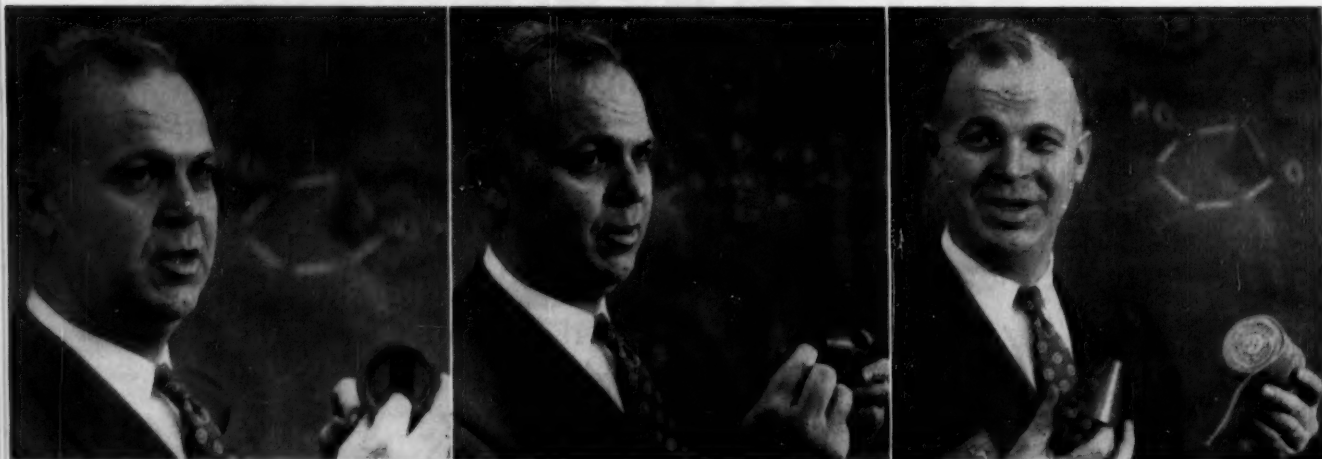
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LIGHTBODY'S DIAGNOSIS: Too much attention to appearance, too little to specifications, instrumentation, or appearance.

Competent Molding=Plastics Sales

WHAT PROBLEMS beset the plastics materials salesman? "Enough to fill a book," any one of them will say—and he's probably right. This week CW, with a camera, journeyed to White Oak, Md., interviewed Al Lightbody, chief of the Naval Ordnance Laboratory's Chemical Division, on some aspects—from his particular vantage point—of the multifarious problems.

The plastics material salesman seldom sees his real opposition face to face. It's not the fabricator; for if the salesman has a good product at the right price, he can convince him. It's the ultimate consumer—be it a child with a fragile plastic toy, a housewife with a torn shower curtain, an industrial man with lost production as a result

of a faulty molding, or a military service with a not-up-to-specs ordnance item.

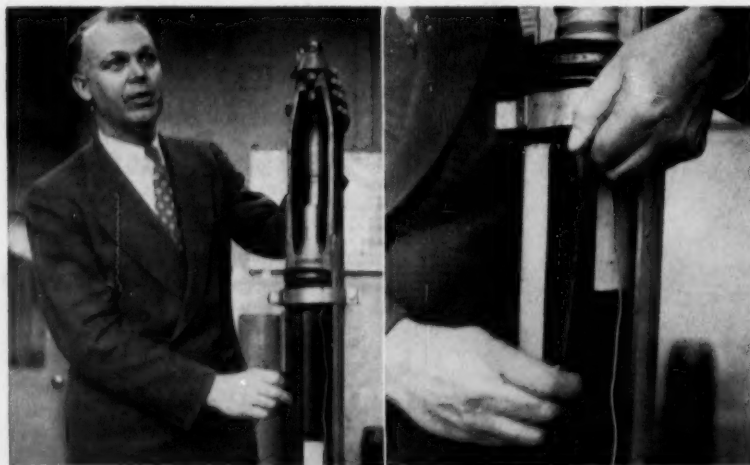
And the dissatisfied consumer seldom vents his ire on the fabricator. It's "plastics" that get the blame, and it's the resins manufacturer (as well as the fabricator) who loses the next order.

Big Buyer: What the military services have to say on this problem is worth listening to, for they buy several millions of dollars' worth of plastic items—and they buy these items on strict specifications.

Al Lightbody, chief of the Naval Ordnance Laboratory's Chemical Division, sets the quality standards, writes the specifications for plastic components of ordnance items purchased by the Navy. A development laboratory for the Bureau of Ordnance, NOL also has a part in writing "MIL" specifications—those used by more than one military service.

Lightbody and his colleagues don't directly buy plastics. Their contract-letting is limited to development activities supplementing their own work in developing specs. But they are in a position, as a result of their close working associations with the plastics industry, to advise Bureau of Ordnance procurement people—to tell them, for example, that such-and-such a molder is qualified to handle a particular job.

Molders Differ: Such advice implies that some molders aren't qualified, and Lightbody admits that this is certainly the case. "Take this rocket (see cuts, left), he explains. "One of the requirements is that there always be a constant burning area of the propellant grain. To keep the area constant, you put plastic strips along the



MOLDING'S THE DIFFERENCE: Some inferior results with superior materials.

grain. The plastic mustn't warp, for if it does the propellant burns unevenly. We tried both cellulose acetate and ethylcellulose, and despite the latter's superior dimensional stability, we got more warping with some molders' ethylcellulose strips than with other molders' cellulose acetate strips."

In these circumstances, the molders' first reaction is to blame the raw material. But most of the time that's sheer nonsense, points out Lightbody. "There was one case," he recalls, "where a molder had some 35-40% rejects, but when he complained, his supplier told him that the other molder working on the same contract and using identical raw material had virtually none."

One impracticable solution would be for all molders working on the same contract to use identical processes and identical machines; some now use single-cavity molds, others use multicavity dies, and all use varying mold cycles. A more feasible solution, thinks Lightbody, is for molders to have better instrumentation. "It's not much of an answer, but at least they might keep their results consistent."

Too, many fabricators are satisfied if their products look all right; but sometimes it takes six to eight weeks for faults to show up. "This piece (see cut, top right, p. 90), for example, shows cracks radiating from the point of injection. The trouble is, poorly molded pieces like this probably looked acceptable to the molder. We try to specify tests that molders can apply that aren't too extensive or time-consuming."

Sometimes, too, the molder thinks—mistakenly—that he knows better than the specifying customer. "Right now we're working on a spec for a nylon molding," Lightbody says. "It'll require a tensile strength some 2000 lbs. less than you can get. Someone's sure to come back at us and say—in a polite way, of course—that we're crazy. But we've found that only by keeping strength down can we get the balance of properties we want. We hope molders will ask us about this rather than just go ahead and mold for maximum strength, thinking we didn't know what we were doing."

But there are times, of course, when it's the customer that's wrong. "Take

KAY-FRIES

DIETHYL MALONATE



KAY FRIES SPECIFICATIONS

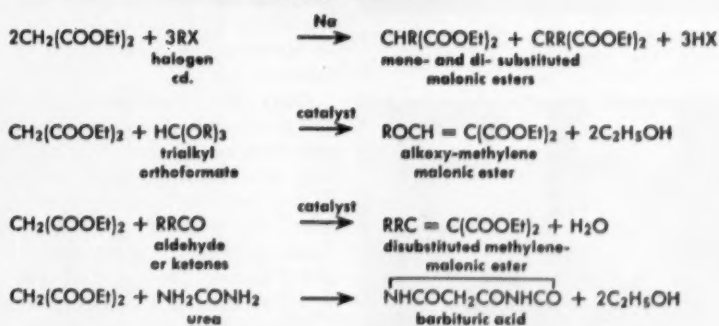
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TYPICAL REACTIONS



(Many substituted malonates may be hydrolyzed and decarboxylated to the corresponding subst. acetic esters.)

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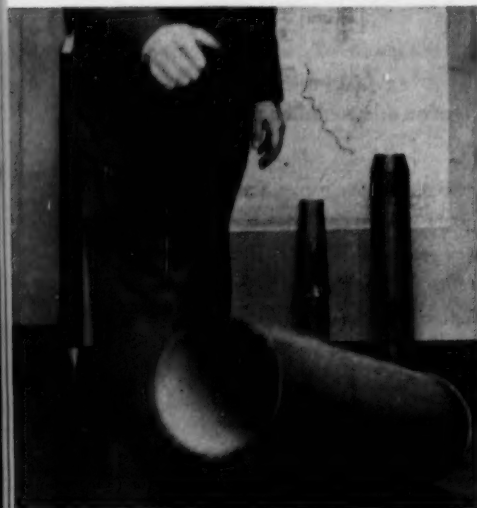
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NOT WORTHWHILE: "You can drop this plastic casing and it will bounce..."



...deform it, and it will recover—not dent, like metal. But the trouble...



...is that, made of plastic, it would cost 10 times as much as a brass casing.'

this fuse head (*cut, lower right*)," says Lightbody. "During World War II it was made of brass; then we switched to phenolic resin and later to formed rolls of resin-impregnated cloth. But the design—for plastics—was bad: the metal design was kept, which had some very thick and some very thin sections."

Customer Service—Both Ways: What does this add up to? First of all, molders should be competent enough to advise a buyer on his specifications, in a case like the fuse heads. And a molder selling to the general public or to industry—which may have no specification except that the purchase perform well—should similarly be competent enough to use the right material in the right equipment with the right process.

Going back one step, the resin manufacturer can't be content simply to accept a molder's order and check his credit rating. He must educate the molder to do right by his materials, since the onus will fall on the plastic if the fabrication doesn't perform properly.

Nor can the materials maker depend on the molder to sell his plastics for him. He must go to the ultimate consumer, sell him on plastics. "Our plastics people," points out Lightbody, "are about as anti-plastic as anybody could be. When someone comes in to suggest that an item be made of plastic, we usually suggest metal—it's cheaper. Usually we find that some salesman has been in to see him and has told him, 'Here's what we've done for someone else; now we can do the same job for you.'"

Can't Sell Nonsense: Lightbody points out that plastics usually compete with metals—and the metals usually win because they're cheaper. "Take this shell casing (*see cuts, left*)," he says. "It's glass fiber-reinforced polyester. You can drop it and it will bounce. You can deform it and it will recover. If you tried this with metal, you'd dent it. But the trouble is, it's not worthwhile. You see, the plastic costs about 10 times as much as a brass casing."

But the fact that the military services buy such large quantities of plastic items proves that these materials can be sold on their merit—and not on a price basis alone. It behooves the resin salesman, then, to



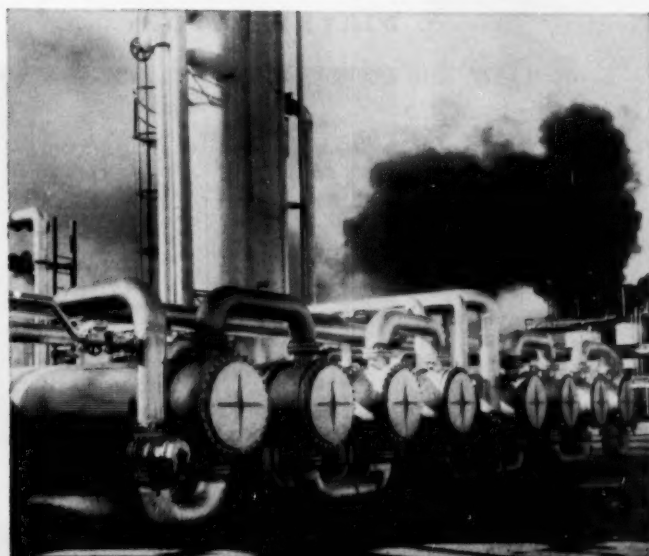
DECEPTIVE APPEARANCE: Answer to delayed faults—simple tests.

sell his product for the jobs it can do better than other materials, and not try to push it for jobs where other materials have a balance of advantages in their favor.

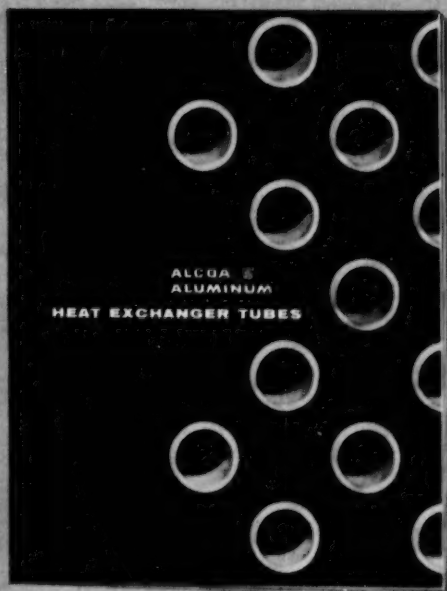
Above all, selling plastics in a tough competitive arena—especially if they're sold on contract according to rigid specs—requires triangular cooperation among buyer, fabricator and materials manufacturer. The buyer knows what ultimate results he wants to achieve; the fabricator knows—or should know—the molding techniques to produce those results; but the resin maker (through his salesmen and technical service representatives) is the only one competent to advise the others on the proper material, its proper use, its advantages and limitations—so that all three can realize a profit.



CUSTOMER ERROR: Switch to plastics may mean change in design.



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EDUCATION AT CHESTNUT RUN: Users will receive a course in . . .

Plastics Instinct Development

Last week, this country's largest chemical maker proudly raised its bid for plastics business. The occasion: the opening of Du Pont's polychemicals sales service laboratory at Chestnut Run, near Wilmington.

From its Lucite sign on the building facade to the Teflon stem packing on its air-conditioning control valves, the new structure is functional proof of the kind of applications that Du Pont is promoting. Translucent ceiling panels, prismatic light diffusers, laminated wall panels, high-voltage feeder cable, exhaust ducts, vent pipes, door hinge bearings and locks, laboratory hoods, the tile on the office floors—all bear witness to the company's concern with plastics.

Technology and Techniques: Equipped to develop processing and design techniques, the \$3-million, 62,000-sq.-ft. installation is the latest segment of the firm's research center.

Primary objective of the facilities, according to Sales Director Elmer Schumacher: customer assistance in the solution of plastics problems.

Typical examples of development and testing equipment include:

- Injection machines for molding samples of Zytel nylon, Alathon polyethylene and Lucite acrylic resins.
- An extruder-laminator for plastic-coating paper, cloth, metal foil or cellophane.
- A variety of extruders ranging

from a 1¼-in. wire coater to a 4½-in. machine for extruding heavy rigid sheeting.

- A pantograph-guided drill press (see cut) for machining intricate models from resin for testing prior to building final injection molds.

In addition to the plastics processing equipment, the new setup provides for application design quarters plus an extensive chemical testing section, the latter serving to round out all testing operations under one roof.

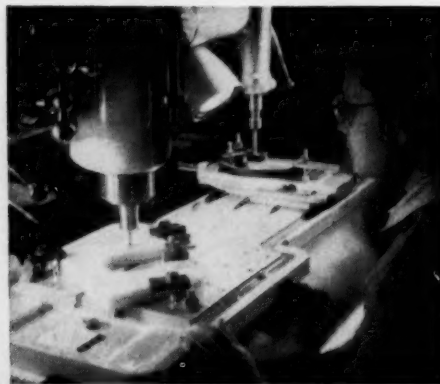
Instinct Developing: Schumacher, justifying the elaborate facilities, explained, "Industry and the public know almost instinctively how to use the traditional wood, stone, iron and glass; and how to design and adjust for their properties and limitations.

"Plastic materials, on the other hand, are relatively new, and a great deal of what this sales service laboratory is designed to do must be done to educate users . . ."

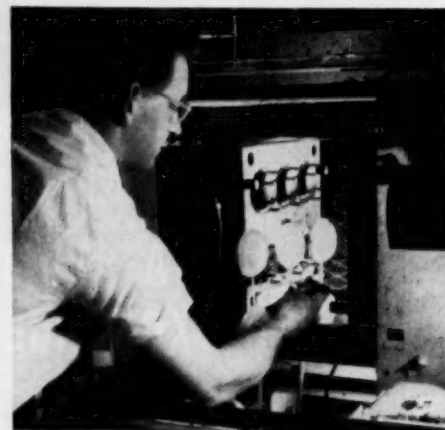
In reviewing polychemicals progress at Du Pont, Schumacher recalled that since its laboratory was organized at Arlington, N.J., about eight years ago, plastics sales have doubled.

Also doubled, but much more rapidly—service requests. Over the brief transfer period from the old Arlington quarters, requests for help from customers have now reached a rate of 80/month, twice the pre-Chestnut Run rate.

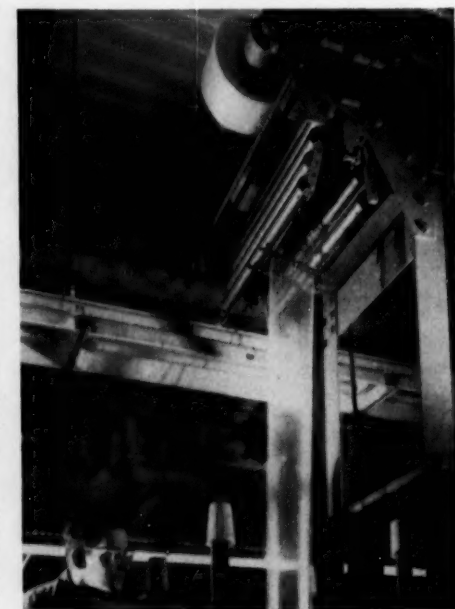
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P 5415 Chemical Week
330 W. 42 St., New York 36, N. Y.

PETROCHEMICALS

The Standard Oil Company (Ohio)
Petrochemical Department
is looking for

Technical Sales People

for its new nitrogen petrochemical operations in Lima, Ohio. Applicants should have the following educational background and industrial experience:

Industrial Chemicals Salesman: chemical degree plus experience in industrial sales, or equivalent, to qualify as area sales representative to industrial accounts selling ammonia and derivatives. Man should be willing to travel in Ohio and adjoining states and exhibit mental curiosity in industrial application of products. Age range 25-40.

Salaries commensurate with experience and level in organization. Advancements on merit basis.

If you should qualify and are looking for a permanent job with a growing but secure mid-west company, write giving full information on education, industrial experience, military experience, and personal data to E. G. Glass, Jr., 1770 Midland Building, Cleveland 15, Ohio.

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for its new nitrogen petrochemical operation in Lima, Ohio. Applicants should have the following educational background and industrial experience:

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Salaries commensurate with experience and level in organization. Advancements on merit basis.

If you can qualify and are looking for a permanent job with a growing but secure midwest company, write, giving full information on education, industrial experience, military experience, and personal data to E. G. Glass, Jr., 1770 Midland Building, Cleveland 15, Ohio.

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Flexibility Over the Long Haul

Chemical companies may ease shipping problems with this latest advance in piggyback transport versatility. It's now possible to ship bagged, drummed or bottled chemicals in a unit that can double either as a storage shed or as a highway trailer van. The innovation: specially designed truck-size cargo compartment that can be fork- or straddle-carried between flat truck trailers and rail flatcars.

Name-plated Mobilvan by manufacturer Clark Equipment Co. (Battle Creek, Mich.) the huge-doored container fits three to a standard rail flatcar, two to a 35-ft highway trailer, one to a city delivery truck, measures

17x8x8 ft. Large fork trucks (15-ton capacity) or straddle carriers handle the units and automatic locks fasten them to the support.

Assets offered by Mobilvans, contends the company, are:

- Flexibility. The unit can be used for rail or road transport and may be combined with other Mobilvans at a truck terminal for shipment.

- Storage capacity. Separate from truck or rail chassis, the container can be used to store materials without tying up a truck trailer.

- Installability. Flatcars and trailers can be equipped to take the huge boxes for under \$525 each and the



ONE FOR THE ROAD: Truck-load units could bring carloads to the door.

installation does not limit the use of the rolling equipment.

Ready for Reference: Monsanto Chemical Co.'s Organic Chemical Division (St. Louis) is offering technical literature on four chemicals. Available: A 35x44-in. wall chart flow-sheeting reactions and containing a bibliography on *o*-nitrochlorobenzene; technical data sheets listing chemical and general physical properties for *o*-nitrobenzenesulfonyl chloride β -(*o*-chloroanilino) propionitrile, and 2-mercaptobenzoxazole.

• *n*-Butyl benzoate—4-page brochure containing data on physical properties, resin solubilities, toxicity, and suggested uses. Carbide and Car-

bon Chemicals Corp., New York.

• Amines—8-page brochure lists primary and secondary amines and describes potential uses. Armour and Co., Chicago.

• "Chemical Progress"—first issue of monthly chemical news leaflet containing information about various uses of chemicals. Carbide and Carbon Chemicals Co., New York.

• Catalog—21-p. brochure outlining services, manufacturing operations, products, and product end uses. Harshaw Industrial Chemicals, Cleveland, O.

• Methylamine—booklet describing safe handling procedures, employee education, physical, and chemical properties for methylamine. Chemical

Safety Data Sheet SD-57, Manufacturing Chemists' Assn., Washington, D.C.

• DuPont's Polychemical Dept. (Wilmington, Del.) is distributing three booklets on its resin products: Teflon, Zytel, and resin engineering materials (Lucite, Alathon, Teflon, and Zytel). Facts contained: physical and chemical properties, production techniques, potential applications.

• Thixotropic gelling and suspension agents—technical data sheets describing the physical properties of colloidalized attapulgite. Suggested organic and aqueous emulsion uses, equipment, suggestions and procedures are included. Minerals and Chemicals Corp. of America, Metuchen, N.J.

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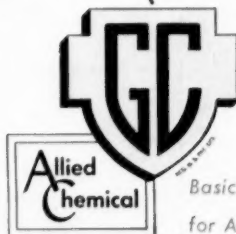
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